

Fusion® Configuration Program User's Guide



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About this guide

This is the companion document to the Durant Fusion configuration software. Although the configuration software can be used to read or edit existing Fusion programs, its primary function is for creating new programs and downloading them to Durant Fusion controls. This guide explains how to use the software, not how to develop the particular Fusion program. For information on the operation of the Fusion control, and on the programming selections available, consult the Fusion User and Operation manual, Durant part number 57550-901. The “Applying the Fusion” chapter of that manual, provides a step by step process for developing a program to meet the requirements of the specific application. Each step in the process refers to one or more destinations in the software that may need to be addressed. Each step also provides reference pages in the manual which explain the terminology, the operation of individual elements of the control, and their interactions with other elements.

About the configuration software

The Fusion configuration software is available free of charge via a link on our website (www.durant.com), or on CD for a reasonable charge (part number 57590-400). In either case, the setup.exe program installs the software in the pc. By default, a folder named “Fusion” is created in Program Files. The Fusion folder consists of two folders, “Docs” and “Icons”. The individual configuration programs are saved with a .fsn extension as files in Docs. Files received in e-mail or read from disk should be saved to Program Files / Fusion / Docs, and then opened from the Fusion configuration program.

Program overview

The program consists of four segments, File, Setup, Tools, and Help.

File: the actual file handling functions of this program, including creating new files, and sending and receiving existing files.

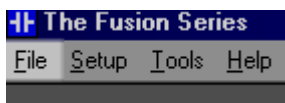
Setup: allows selection of comm port 1 or 2, auto backup interval and number of backups saved, and highlight color.

Tools: the manual communication tool, which allows serial commands to be formatted and sent, and responses to be displayed.

Help: the standard Windows® Help function. Self explanatory.

File, Setup, and Tools in detail

FILE

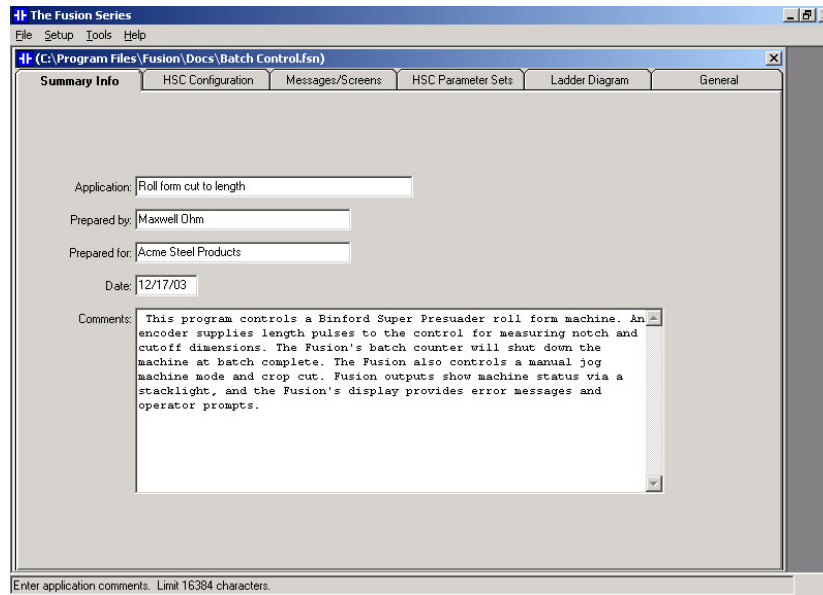


New

Choose the File New menu command to start a new configuration program.

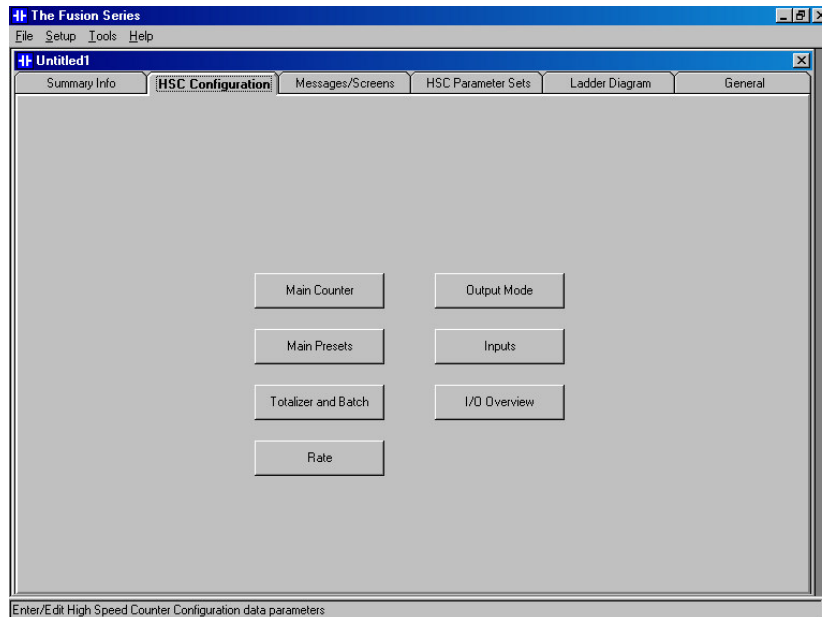
Summary

The summary screen can be used to identify the purpose of the program, its date of origin and author, and a fairly detailed explanation of how it works.



HSC Configuration

The high speed counter is broken down into its component elements (main counter, batch counter, totalizer, and ratemeter) in order to program the HSC in manageable pieces.



Not all Fusion applications will use the High Speed Counter. This tab may be skipped for those programs. If the high speed counter is required, access the needed functions via these buttons. The I/O Overview button tabulates each input and output assignment for a quick visual summary.

Main Counter

MAIN COUNTER SETUP

Select count mode and resolution.
Note: X4 resolution only available for quadrature.

Add/Subtract
Disabled
Add/Subtract
Add/Add
Rate/Count
Count/Direction
Count/Inhibit
Quadrature

X1
X1
X2
X4

HSC Main Counter

Main Counter Input

Count Input Mode: Add/Subtract Resolution: X1

Counter Resets

Reset Input: Disabled

Main Counter Decimal Point/Scaling

Count DP: 000000

Count Scale: 1.00000 Count Scale Calculator

Auto-Recycle: Resets Scaler Remainder

Done

Disabled
Disabled
Reset Main
Reset Total
Reset Main/Total
Reset Batch
Reset Main/Batch
Reset Total/Batch
Reset Main/Total/Batch

If the high speed reset is to be used (I17), select its function.

4

Select count decimal point location, and enter the calculated count scale factor,

OR

Click on the Count Scale Calculator button to have the scale factor calculated by entering the decimal point location and Pulses per Item

Count Scale: 1.00000

Count Scale Calculator

Count Scale Calculator

Formula: Count Scale = Count DP Factor / Pulses per Item

Input Values

Count DP Factor (CDPF)

Count Decimal Point: 000000

Count DP Factor (CDPF): 1

Pulses per Item (PPI): 1

Calculated Count Scale/Round-Off Error %

Count Scale: 1.00000

Round-Off Error %:

Save Count DP and Scale Factor Cancel

Count DP	CDPF
000000	1
00000.0	10
0000.00	100
000.000	1000
00.0000	10000
0.00000	100000

Select decimal point location, and enter Pulses per Item

Pulses per Item (PPI): 1

Finally, click on Save button

Save Count DP and Scale Factor

HSC Main Counter

Main Counter Input
 Count Input Mode: Resolution:

Counter Resets
 Reset Input:

Main Counter Decimal Point/Scaling
 Count DP:
 Count Scale:
 Auto-Recycle:

Select to either reset or save any portion of a scaled count if the main counter auto recycles.

Resets Scaler Remainder
 Resets Scaler Remainder
 Saves Scaler Remainder

When all main counter selections have been made, click Done.
 This will restore the HSC main menu screen.

The Fusion Series
 File Setup Tools Help

Summary Info **HSC Configuration** Messages/Screens HSC Parameter Sets Ladder Diagram General

Main Counter Output Mode
 Main Presets Inputs
 Totalizer and Batch I/O Overview
 Rate

Enter/Edit High Speed Counter Configuration data parameters

Main Presets

MAIN PRESETS FUNCTIONS

Enter the Maximum Preset value allowed to the operator and select the final preset needed

01500.0

Presets Disabled

P1
P2
P3
P4
P5

HSC Main Presets

Main Preset Options

Max. Preset: 99999.9 Preset Active After Reset: P1

Final Preset: Presets Disabled Preset Active After Increment Para. Set: P1

Main Presets/Prewarn

Modify Presets/Prewarn

☒ Preset 1 ☐ Preset 2 ☐ Preset 3 ☐ Preset 4 ☐ Preset 5 ☐ Prewarn

	Prewarn	Auto-Recycle	Increment Batch	Out 1 (K1) Form C	Out 2 (K2) Form C	Out 3 (K3) Form C	Out 4 (K4) Form A	Out 5 (K5) Form A	Out 6 (K6) Transistor	Out 7 (K7) Transistor	Out 8 (K8) 4-20mA	Out 9 (K9) 0-10V
Preset 1	0 Off	0 Off	0 Off	- NA	- NA	- NA	- NA	- NA	- NA	- NA	- NA	- NA
Preset 2	0 Off	0 Off	0 Off	- NA	- NA	- NA	- NA	- NA	- NA	- NA	- NA	- NA
Preset 3	0 Off	0 Off	0 Off	- NA	- NA	- NA	- NA	- NA	- NA	- NA	- NA	- NA
Preset 4	0 Off	0 Off	0 Off	- NA	- NA	- NA	- NA	- NA	- NA	- NA	- NA	- NA
Preset 5	0 Off	0 Off	0 Off	- NA	- NA	- NA	- NA	- NA	- NA	- NA	- NA	- NA
Prewarn	0 Off	0 Off	0 Off	- NA	- NA	- NA	- NA	- NA	- NA	- NA	- NA	- NA

☒ Device Display Format

Done

Enabling one or more presets activates the remaining functions

HSC Main Presets

Main Preset Options

Max. Preset: 01500.0 Preset Active After Reset: P1

Final Preset: P2 Preset Active After Increment Para. Set: P1

Main Presets/Prewarn

Modify Presets/Prewarn

☒ **Preset 1** ☐ Preset 2 ☐ Preset 3 ☐ Preset 4 ☐ Preset 5 ☐ Prewarn

	Prewarn	Auto-Recycle	Increment Batch	Out 1 (K1) Form C	Out 2 (K2) Form C	Out 3 (K3) Form C	Out 4 (K4) Form A	Out 5 (K5) Form A	Out 6 (K6) Transistor	Out 7 (K7) Transistor	Out 8 (K8) 4-20mA	Out 9 (K9) 0-10V
Preset 1	0	0	0	-	-	-	-	-	-	-	-	-
Preset 2	0	0	0	-	-	-	-	-	-	-	-	-
Preset 3	0	0	0	-	-	-	-	-	-	-	-	-
Preset 4	0	0	0	-	-	-	-	-	-	-	-	-
Preset 5	0	0	0	-	-	-	-	-	-	-	-	-
Prewarn				-	-	-	-	-	-	-	-	-

☒ Device Display Format

Done

If more than one preset is chosen,
select the preset to be active after
reset and after the parameter set is
changed



HSC Main Presets

Main Preset Options

Max. Preset: 01500.0 Preset Active After Reset: P1

Final Preset: P2 Preset Active After Increment Para. Set: P1

Main Presets/Prewarn

Modify Presets/Prewarn

☒ Preset 1 ☐ Preset 2 ☐ Preset 3 ☐ Preset 4 ☐ Preset 5 ☐ Prewarn

	Prewarn	Auto-Recycle	Increment Batch	Out 1 (K1) Form C	Out 2 (K2) Form C	Out 3 (K3) Form C	Out 4 (K4) Form A	Out 5 (K5) Form A	Out 6 (K6) Transistor	Out 7 (K7) Transistor	Out 8 (K8) 4-20mA	Out 9 (K9) 0-10V
Preset 1	0 Off	0 Off	0 Off	- NA	- NA	- NA	- NA	- NA	- NA	- NA	- NA	- NA
Preset 2	0	0	0	-	-	-	-	-	-	-	-	-
Preset 3	0	0	0	-	-	-	-	-	-	-	-	-
Preset 4	0	0	0	-	-	-	-	-	-	-	-	-
Preset 5	0	0	0	-	-	-	-	-	-	-	-	-
Prewarn	0	0	0	-	-	-	-	-	-	-	-	-

Current Preset/Prewarn Settings

☒ Device Display Format

Done

With Preset 1 selected, make
Prewarn, Auto Recycle, and
Increment Batch counter assignments



Assign outputs to turn ON, or
turn OFF, or No Action at
Preset 1



Repeat the function assignments for
the remaining presets and prewarn, if
used

Modify Presets/Prewarn

☐ Preset 1 ☒ Preset 2 ☐ Preset 3 ☐ Preset 4 ☐ Preset 5 ☐ Prewarn

	Prewarn	Auto-Recycle	Increment Batch	Out 1 (K1) Form C	Out 2 (K2) Form C	Out 3 (K3) Form C	Out 4 (K4) Form A	Out 5 (K5) Form A	Out 6 (K6) Transistor	Out 7 (K7) Transistor	Out 8 (K8) 4-20mA	Out 9 (K9) 0-10V
Preset 1	1 On	1 On	1 On	- NA	- NA	- NA	- NA	0 Off	- NA	- NA	- NA	- NA
Preset 2	1 On	1 On	1 On	- NA	- NA	- NA	- NA	0 Off	- NA	- NA	- NA	- NA
Preset 3	1 On	1 On	1 On	- NA	- NA	- NA	- NA	0 Off	- NA	- NA	- NA	- NA
Preset 4	1 On	1 On	1 On	- NA	- NA	- NA	- NA	0 Off	- NA	- NA	- NA	- NA
Preset 5	1 On	1 On	1 On	- NA	- NA	- NA	- NA	0 Off	- NA	- NA	- NA	- NA
Prewarn	1 On	1 On	1 On	- NA	- NA	- NA	- NA	0 Off	- NA	- NA	- NA	- NA

Current Preset/Prewarn Settings

	Prewarn	Auto-Recycle	Increment Batch	Out 1 (K1)	Out 2 (K2)	Out 3 (K3)	Out 4 (K4)	Out 5 (K5)	Out 6 (K6)	Out 7 (K7)	Out 8 (K8)	Out 9 (K9)
Preset 1	1	0	0	-	-	-	-	0	-	-	-	-
Preset 2	1	1	1	-	-	-	-	0	-	-	-	-
Preset 3	1	1	1	-	-	-	-	0	-	-	-	-
Preset 4	1	1	1	-	-	-	-	0	-	-	-	-
Preset 5	1	1	1	-	-	-	-	0	-	-	-	-
Prewarn	1	1	1	-	-	-	-	0	-	-	-	-

Preset functions are tabulated for a quick, visual summary

Current Preset/Prewarn Settings

	Prewarn	Auto-Recycle	Increment Batch	Out 1 (K1)	Out 2 (K2)	Out 3 (K3)	Out 4 (K4)	Out 5 (K5)	Out 6 (K6)	Out 7 (K7)	Out 8 (K8)	Out 9 (K9)
Preset 1	1	0	0	-	-	-	-	0	-	-	-	-
Preset 2	1	1	1	-	-	-	-	0	-	-	-	-
Preset 3	0	0	0	-	-	-	-	-	-	-	-	-
Preset 4	0	0	0	-	-	-	-	-	-	-	-	-
Preset 5	0	0	0	-	-	-	-	-	-	-	-	-
Prewarn				-	-	-	-	1	-	-	-	-

☒ Device Display Format

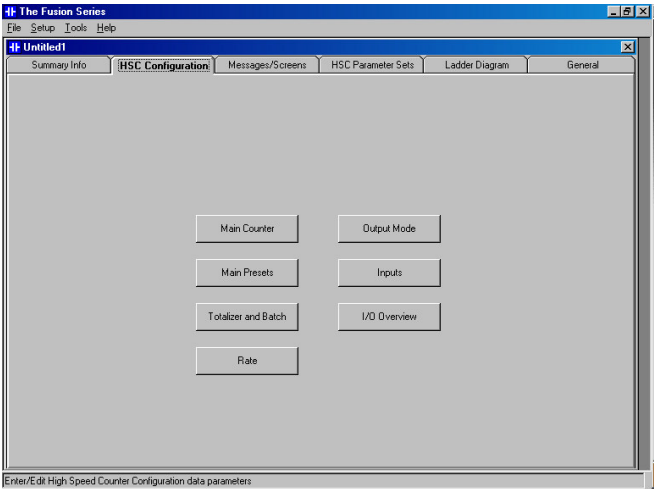
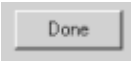
Unchecking Device Display Format changes the I/O designation to On/Off

Current Preset/Prewarn Settings

	Prewarn	Auto-Recycle	Increment Batch	Out 1 (K1)	Out 2 (K2)	Out 3 (K3)	Out 4 (K4)	Out 5 (K5)	Out 6 (K6)	Out 7 (K7)	Out 8 (K8)	Out 9 (K9)
Preset 1	On	Off	Off	-	-	-	-	Off	-	-	-	-
Preset 2	On	On	On	-	-	-	-	Off	-	-	-	-
Preset 3	Off	Off	Off	-	-	-	-	-	-	-	-	-
Preset 4	Off	Off	Off	-	-	-	-	-	-	-	-	-
Preset 5	Off	Off	Off	-	-	-	-	-	-	-	-	-
Prewarn				-	-	-	-	On	-	-	-	-

☐ Device Display Format

When all preset / prewarn functions are assigned, click Done. *The actual preset values may be entered in Parameter Sets, or may be editable on the display.*



Totalizer and Batch

TOTALIZER AND BATCH COUNTER

Select the totalizer mode, if needed, and enable the totalizer preset, batch counter, and batch preset as necessary

HSC Totalizer and Batch

Totalizer and Batch Counter Options

Totalizer Mode: Follows Main
Batch Mode: Enabled
Totalizer Preset: Enabled
Batch Preset: Disabled

Totalizer and Batch Counter Presets

Modify Totalizer and Batch Presets

☒ Totalizer Preset ☐ Batch Preset

Auto-Recycle Out 1 (K1) Out 2 (K2) Out 3 (K3) Out 4 (K4) Out 5 (K5) Out 6 (K6) Out 7 (K7) Out 8 (K8) Out 9 (K9)
Form C Form C Form C Form A Form A Transistor Transistor 4-20mA 0-10V

Current Totalizer and Batch Counter Preset Settings

Preset	Auto-Recycle	Out 1 (K1)	Out 2 (K2)	Out 3 (K3)	Out 4 (K4)	Out 5 (K5)	Out 6 (K6)	Out 7 (K7)	Out 8 (K8)	Out 9 (K9)
Totalizer		Compare	-	-	-	-	-	-	-	-
Batch	Off	-	-	-	-	-	-	-	-	-

☐ Device Display Format

Done

If the totalizer preset is enabled, assign outputs to it as appropriate. If the batch preset is enabled choose auto recycle and outputs as appropriate. *The actual preset values may be entered in Parameter Sets, or may be editable on the display.*

Totalizer and batch counter preset functions are tabulated for a quick, visual summary. When all functions are chosen, click Done

Current Totalizer and Batch Counter Preset Settings

Preset	Auto-Recycle	Out 1 (K1)	Out 2 (K2)	Out 3 (K3)	Out 4 (K4)	Out 5 (K5)	Out 6 (K6)	Out 7 (K7)	Out 8 (K8)	Out 9 (K9)
Totalizer		Compare	-	-	-	-	-	-	-	-
Batch	Off	-	-	-	-	-	-	-	-	-

☐ Device Display Format

Done

Rate

RATE

If rate is not needed, skip this screen.
Enable rate, if needed, and enable
rate high and/or low presets if
needed.

Enter rate update and rate zero
times

01.0

20

Scaling can be done either
manually, by selecting the decimal
point location and entering the
calculated scale factor,

Rate Scale: 60.00

OR

The scale factor can be calculated and
saved by clicking on the Rate Scale
Calculator button

Rate Scale Calculator

Enter the number of seconds in the rate time units, enter the PPI value, and select the rate decimal point location

The image shows the 'Rate Scale Calculator' dialog box with several annotations. Arrows point from the text 'Enter the number of seconds in the rate time units, enter the PPI value, and select the rate decimal point location' to the 'Rate Time Units (No. of Seconds)' input field (containing '60'), the 'Pulses per Item (PPI)' input field (containing '15'), and the 'Rate DP Factor (RDPF)' dropdown menu. The dropdown menu is open, showing a list of options: '00000', '00000', '0000.0', '000.00', '00.000', and '0.0000'. The '0000.0' option is selected. Another arrow points from the 'Save Rate DP and Scale Factor' button at the bottom of the dialog box to the text 'Click on Save Rate DP and Scale Factor when done'.

Rate Scale Calculator

Formula: Rate Scale = Rate Time Units X Rate DP Factor / Pulses per Item

Input Values

Rate Time Units (No. of Seconds): 60
Pulses per Item (PPI): 15

Rate DP Factor (RDPF)

Rate Decimal Point: 00000
Rate DP Factor (RDPF): 0000.0

Rate DP Factor (RDPF) table:

Rate DP	RDPF
00000	1
0000.0	10
000.00	100
00.000	1000
0.0000	10000

Calculated Rate Scale/Round-Off Error %

Rate Scale: 4.000
Round-Off Error %: 0.0000%

Save Rate DP and Scale Factor Cancel

Click on Save Rate DP and Scale Factor when done

The image shows the 'HSC Rate' dialog box. It has two sections: 'Rate Options' and 'Rate Presets'. In the 'Rate Options' section, there are four fields: 'Rate Mode' (set to 'Enabled'), 'Rate Preset' (set to 'RL/RH Enabled'), 'Rate DP' (set to '0000.0'), and 'Rate Scale' (set to '40.00'). There are also two buttons: 'Rate Scale Calculator' and 'Rate Update (Seconds): 01.0'. In the 'Rate Presets' section, there are two fields: 'Rate Zero (Seconds): 002.0'.

HSC Rate

Rate Options

Rate Mode: Enabled
Rate Preset: RL/RH Enabled
Rate DP: 0000.0
Rate Scale: 40.00
Rate Update (Seconds): 01.0
Rate Zero (Seconds): 002.0

Rate Presets

If rate presets are enabled, select one preset

HSC Rate

Rate Options

Rate Mode: Rate Preset:

Rate DP: Rate Scale:

Rate Update (Seconds): Rate Zero (Seconds):

Rate Presets

Modify Rate Presets:

☒ **Rate High Preset** ☐ Rate Low Preset

Out 1 (K1) Out 2 (K2) Out 3 (K3) Out 4 (K4) Out 5 (K5) Out 6 (K6) Out 7 (K7) Out 8 (K8) Out 9 (K9)

Form C Form C Form C Form A Form A Transistor Transistor 4-20mA 0-10V

Current Rate Preset Settings:

Rate Preset	Out 1 (K1)	Out 2 (K2)	Out 3 (K3)	Out 4 (K4)	Out 5 (K5)	Out 6 (K6)	Out 7 (K7)	Out 8 (K8)	Out 9 (K9)
High	-	-	-	-	-	-	-	-	-
Low	-	-	-	-	-	-	-	-	-

☐ Device Display Format

Assign outputs to be latched On or Off, or Compared at each update as appropriate

- NA

0 Off

1 On

C Compare

HSC Rate

Rate Options

Rate Mode: Rate Preset:

Rate DP: Rate Scale:

Rate Update (Seconds): Rate Zero (Seconds):

Rate Presets

Modify Rate Presets:

☐ Rate High Preset ☒ **Rate Low Preset**

Out 1 (K1) Out 2 (K2) Out 3 (K3) Out 4 (K4) Out 5 (K5) Out 6 (K6) Out 7 (K7) Out 8 (K8) Out 9 (K9)

Form C Form C Form C Form A Form A Transistor Transistor 4-20mA 0-10V

Current Rate Preset Settings:

Rate Preset	Out 1 (K1)	Out 2 (K2)	Out 3 (K3)	Out 4 (K4)	Out 5 (K5)	Out 6 (K6)	Out 7 (K7)	Out 8 (K8)	Out 9 (K9)
High	-	-	-	-	-	On	-	-	-
Low	-	-	-	-	-	Off	-	Compare	-

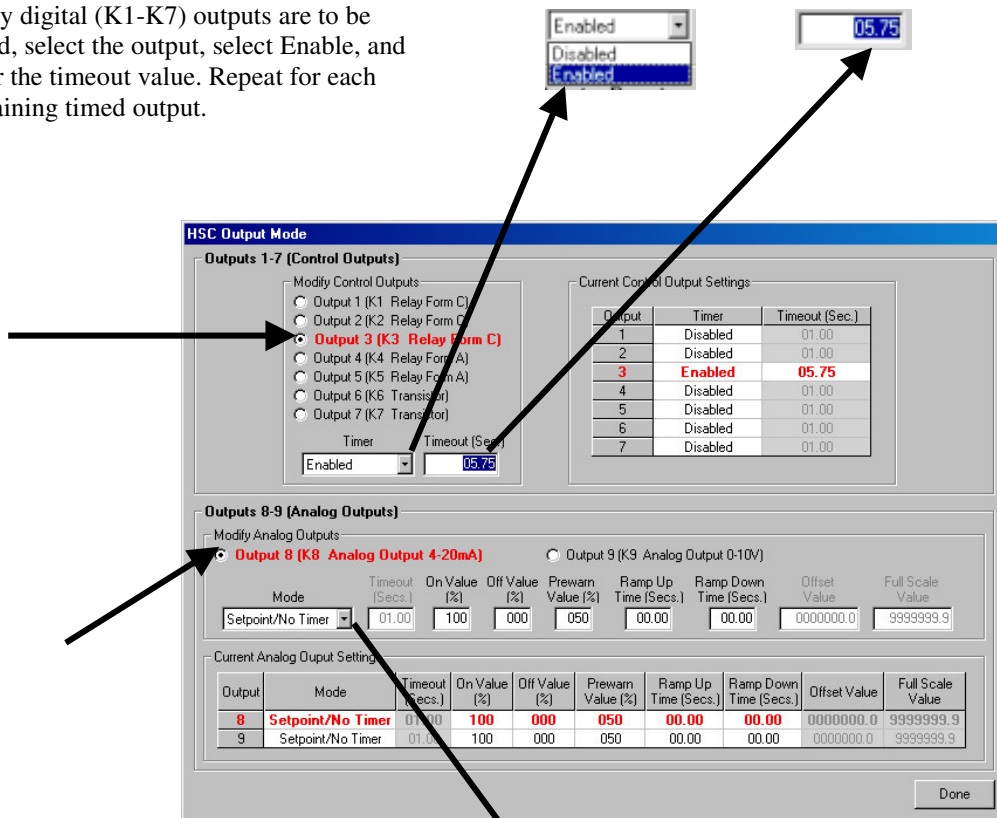
☐ Device Display Format

When all the necessary outputs have been assigned, click Done. The actual preset values may be entered in Parameter Sets or may be editable on the display.

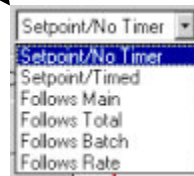
Output Mode

OUTPUT MODE

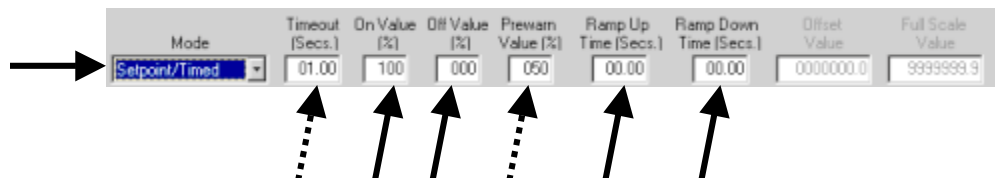
If any digital (K1-K7) outputs are to be timed, select the output, select Enable, and enter the timeout value. Repeat for each remaining timed output.



For analog outputs K8 and K9, first select the output, then select the operating mode for that output



For an analog setpoint output, enter the Timeout (optional), On Value, Off Value and Prewarn Value (all in %, and Prewarn optional), and Ramp Up and Ramp Down times



For an analog output following count or rate, enter the Offset and Full Scale values

The analog output settings are tabulated for a quick, visual summary. If everything is correct, click Done

Current Analog Output Settings

Output	Mode	Timeout (Secs.)	On Value (%)	Off Value (%)	Prewarn Value (%)	Ramp Up Time (Secs.)	Ramp Down Time (Secs.)	Offset Value	Full Scale Value
8	Setpoint/Timed	01.00	100	000	050	00.00	00.00	0000000.0	9999999.9
9	Follows Rate	01.00	100	000	050	00.00	00.00	0000.0	0500.0

Done

Inputs

CONTROL INPUTS

First, select one of the control inputs

HSC Inputs

Inputs

Modify Inputs

1 2 3 4 5 6 7 8 9 10

Parameter Set Main Counter Totalizer Batch Counter Out 1 (K1) Out 2 (K2) Out 3 (K3) Out 4 (K4) Out 5 (K5) Out 6 (K6) Out 7 (K7) Out 8 (K8) Out 9 (K9)

- NA - NA - NA - NA - NA - NA - NA - NA - NA - NA - NA - NA - NA

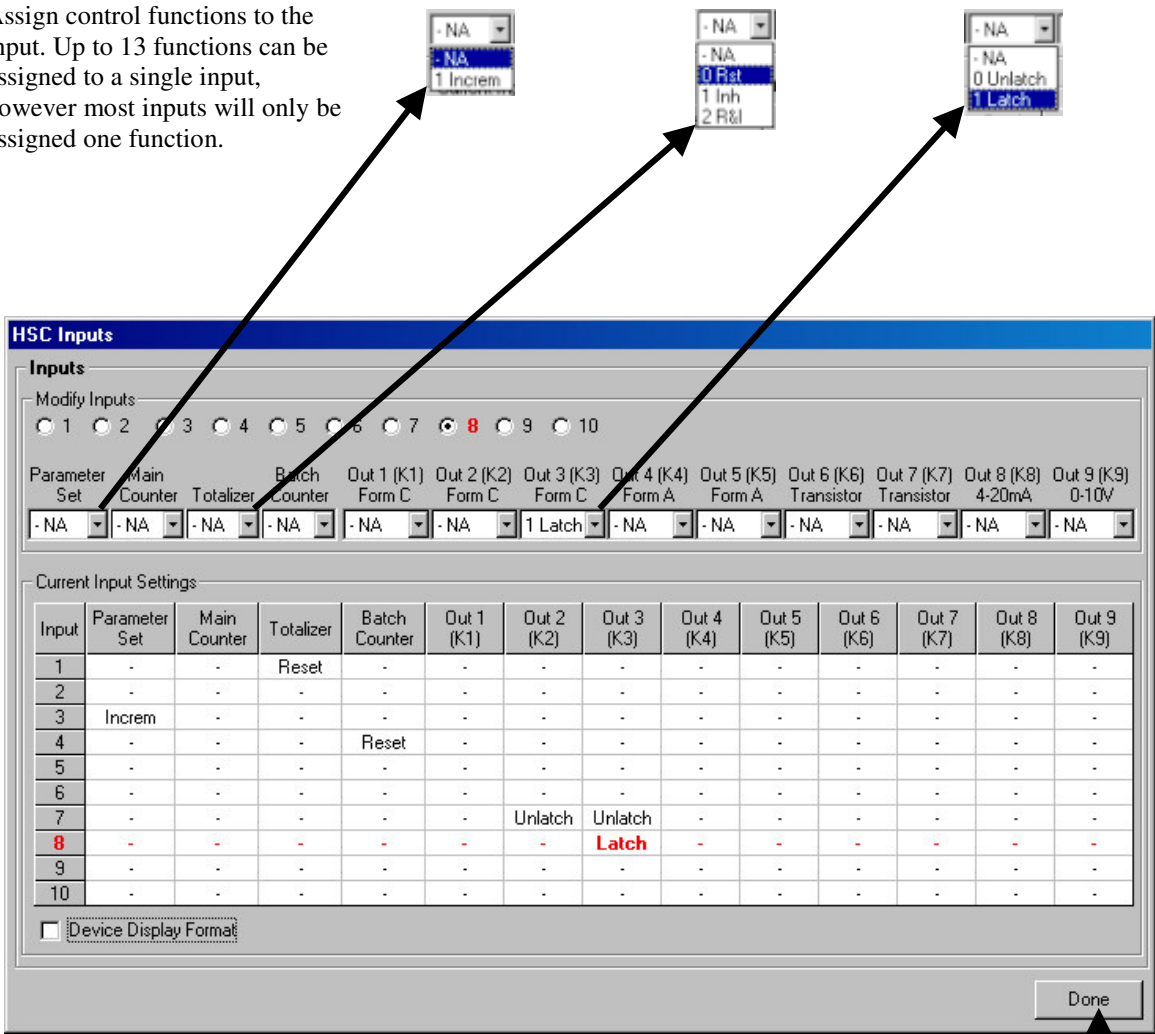
Current Input Settings

Input	Parameter Set	Main Counter	Totalizer	Batch Counter	Out 1 (K1)	Out 2 (K2)	Out 3 (K3)	Out 4 (K4)	Out 5 (K5)	Out 6 (K6)	Out 7 (K7)	Out 8 (K8)	Out 9 (K9)
1	-	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-	-	-
9	-	-	-	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-	-	-	-

☒ Device Display Format

Done

Assign control functions to the input. Up to 13 functions can be assigned to a single input, however most inputs will only be assigned one function.



Repeat the process for each control input that is needed to perform a control function. Input functions are tabulated for a quick, visual summary. When all input control functions have been programmed, click Done



I/O OVERVIEW TABLE

The I/O Overview button accesses a table which shows all HSC functions for each input, trigger events for each output, and shows which output coils have been used in the ladder logic. This summarizes which resources have been used, and for what purpose.

This screen allows editing. Select an output or count function and edit the events which affect it as necessary.

HSC I/O Overview

I/O Overview

Modify I/O

☒ Out 1 ☐ Out 2 ☐ Out 3 ☐ Out 4 ☐ Out 5 ☐ Out 6 ☐ Out 7 ☐ Out 8 ☐ Out 9

☐ Parameter Set ☐ Main Counter ☐ Totalizer ☐ Batch Counter

Input 1 Input 2 Input 3 Input 4 Input 5 Input 6 Input 7 Input 8 Input 9 Input 10 Reset Key Run Key

- NA - NA - NA - NA - NA - NA - NA - NA - NA - NA - NA - NA

Preset 1 (P1) Preset 2 (P2) Preset 3 (P3) Preset 4 (P4) Preset 5 (P5) Prewarn Total Preset (TP) Batch Preset (BP) Rate High Preset (RH) Rate Low Preset (RL)

- NA - NA - NA - NA - NA - NA - NA - NA - NA - NA - NA - NA

Current I/O Settings

HSC I/O	Overview	Input Terminals										Buttons		HSC Events										LL Coils
		1	2	3	4	5	6	7	8	9	10	Rst	Run	P1	P2	P3	P4	P5	Pw	TP	BP	RH	RL	
Out	1 (K1)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Cmp	-	-	-
	2 (K2)	-	-	-	-	-	-	U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	3 (K3)	-	-	-	-	-	-	U	L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	4 (K4)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	5 (K5)	-	-	-	-	-	-	-	-	-	-	-	Off	Off	-	-	-	-	On	-	-	-	-	
	6 (K6)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	On	Off	-	
	7 (K7)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	8 (K8)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Cmp	-	
	9 (K9)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
HSC	Para S	-	-	Inc	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Main	-	-	-	-	-	-	-	-	-	-	-	-	ARC	-	-	-	-	-	-	-	-	-	
	Total	Rst	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Batch	-	-	-	Rst	-	-	-	-	-	-	-	-	Inc	-	-	-	-	-	-	-	-	-	

☐ Device Display Format

Done

Click Done to return to the HSC main menu

The Fusion Series

File Setup Tools Help

Summary Info **HSC Configuration** Messages/Screens HSC Parameter Sets Ladder Diagram General

Main Counter Output Mode

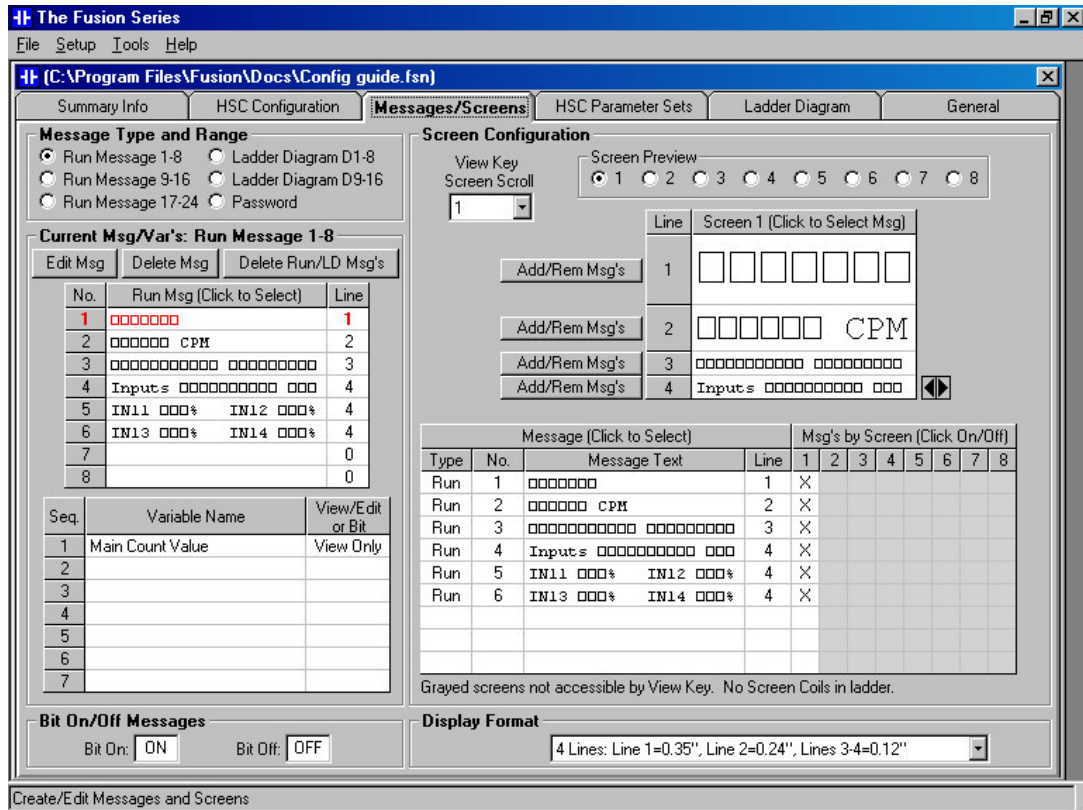
Main Presets Inputs

Totalizer and Batch I/O Overview

Rate

Enter/Edit High Speed Counter Configuration data parameters

Messages / Screens



Messages / Screens will normally be programmed after HSC Configuration and the Ladder Diagram have been programmed. A list of messages is a by-product of following the user's manual application guide in developing a Fusion program. Programming the Messages / Screens menu with the configuration software is a seven step process:

1. Since it is unlikely that any of the default messages will be exactly right for the real application, all existing messages will be deleted.
2. Convert the message list into screen layouts, and determine the screen display format.
3. Set the number of operator scrollable screens.
4. Pick a message type and message number.
5. Assemble the actual message.
6. Assign the message to one or more screens.
7. Repeat steps 4-6 for each remaining message.

The procedure will be shown in detail in the context of an example. In the course of the example, several messages which include variables will be programmed. There are hundreds of HSC and ladder data items that are considered variables. These are not all shown on a single screen using the configuration software, but are accessed by branching from general categories of data items to specific items (variables). The paths to specific variables are shown following the example as a reference.

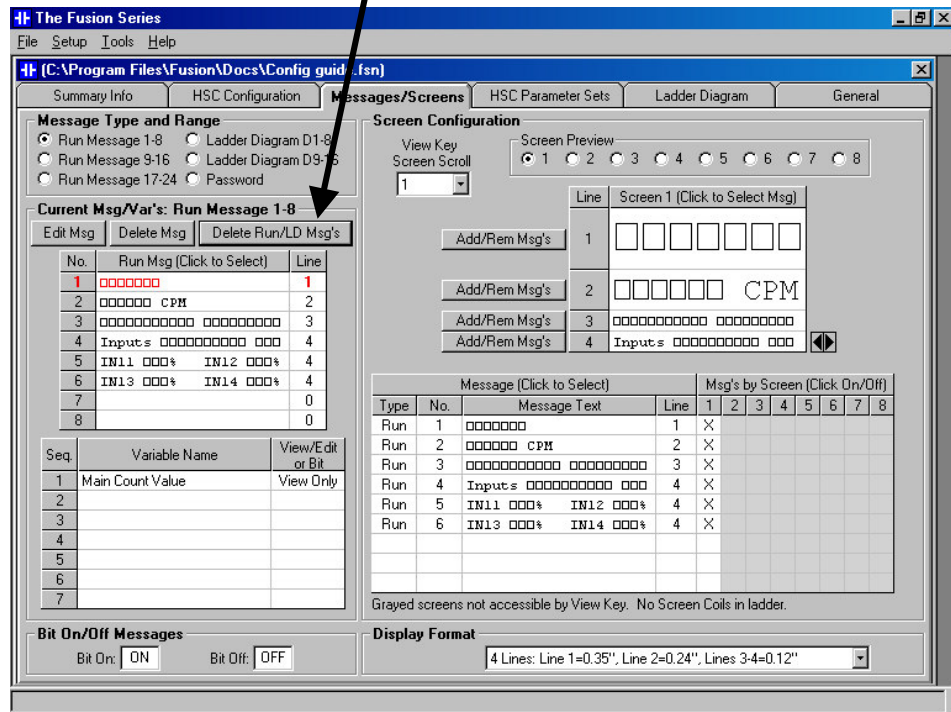
MESSAGES / SCREENS EXAMPLE

Using the Applying the Fusion section of the Fusion User and Operation manual for programming a unit in a batch control application, the following list of messages was generated:

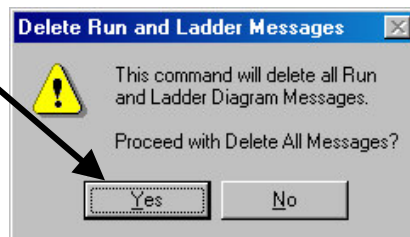
1. main count value
2. preset 1
3. "batch complete" status message
4. batch count
5. totalizer value
6. Start, Stop, and Resume key identifiers
7. rate in GPM when a batch is running (ladder message)
8. "OVERFLOW" alarm message (ladder message)

Step 1: delete the default messages

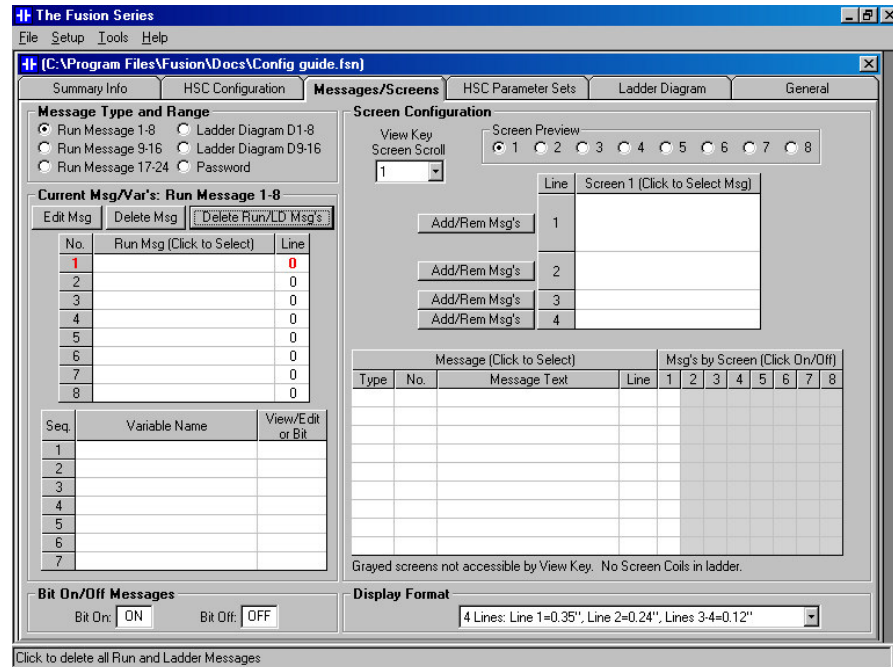
Click the Delete Run/LD Msg's button



Click the Yes button



All run and ladder messages will clear

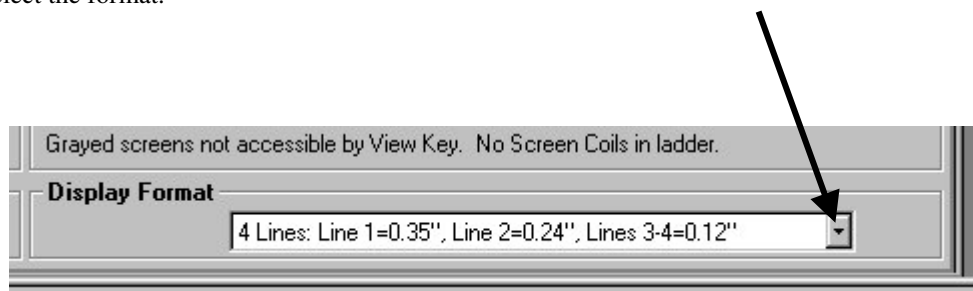


Step 2: convert the message list into screen layouts and determine the display screen format.

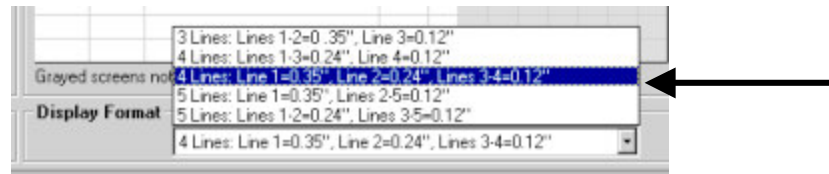
The main count value, preset 1, batch complete, and rate messages will be on one screen, and the batch count and totalizer will be on a second screen. The key identifiers and overflow alarm message will appear on both screens. The messages will be laid out on each screen as in the table below:

	Screen 1	Screen 2
Row 1	Main count value	Batches (text)
Row 2	Preset 1 / OVERFLOW	Batch count value /OVERFLOW
Row 3	Batch complete / rate	Totalizer value
Row 4	Start, Stop, Resume	Start, Stop, Resume

In this example, four lines are required per screen. Click the Display Format drop down button to select the format.

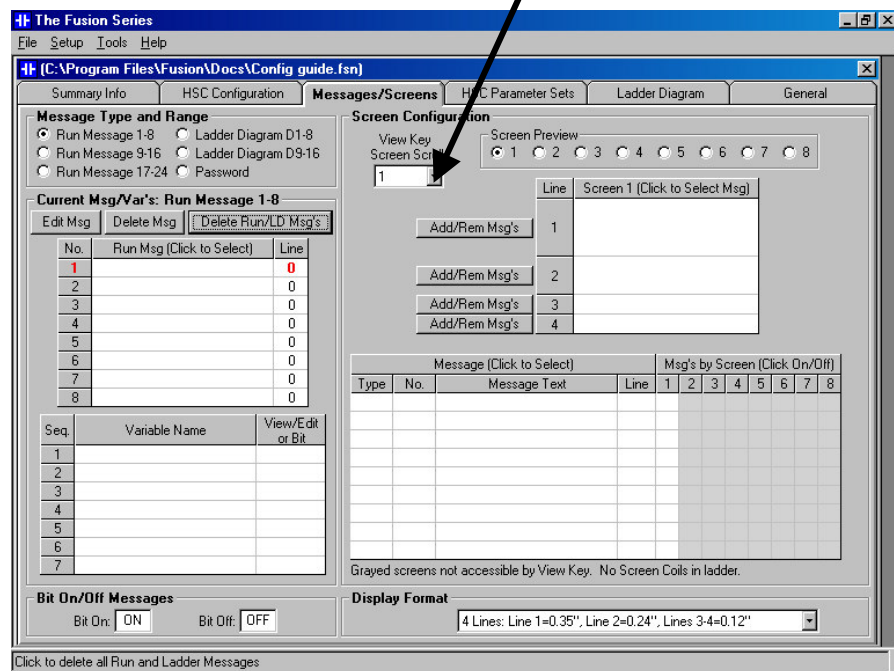


Select one of the four line display formats.

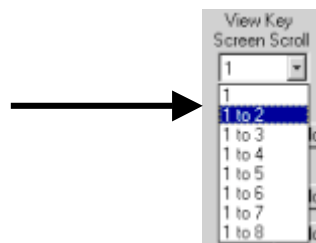


Step 3: set the number of operator scrollable screens.

Click the View Key Screen Scroll drop down button.

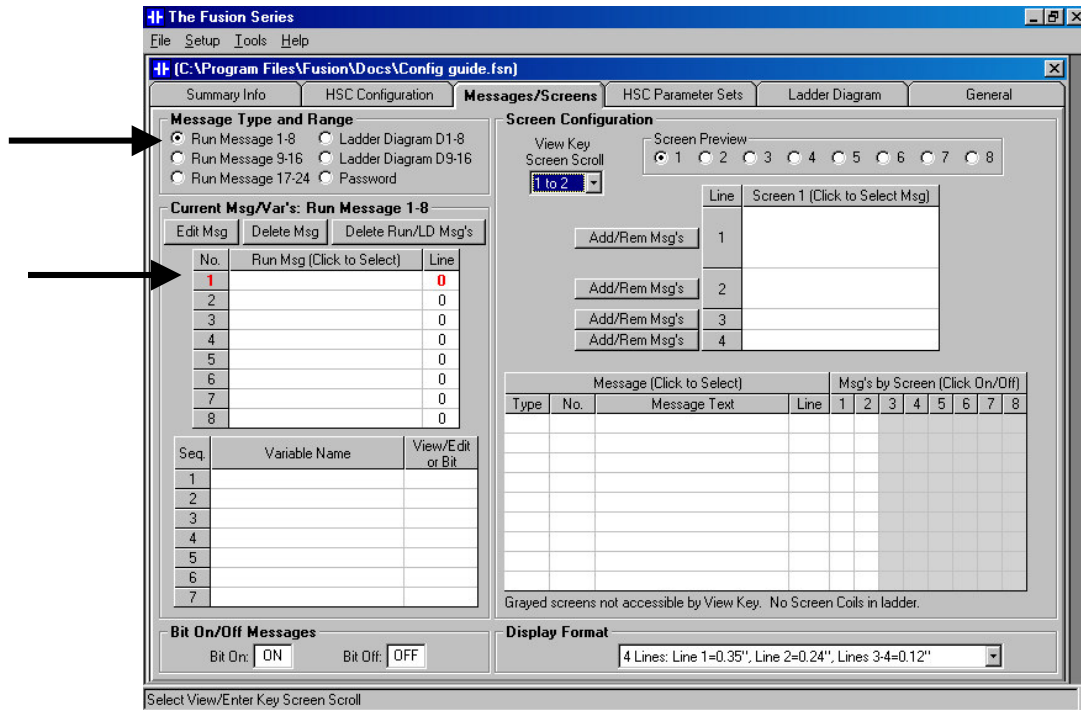


Select 1 to 2.



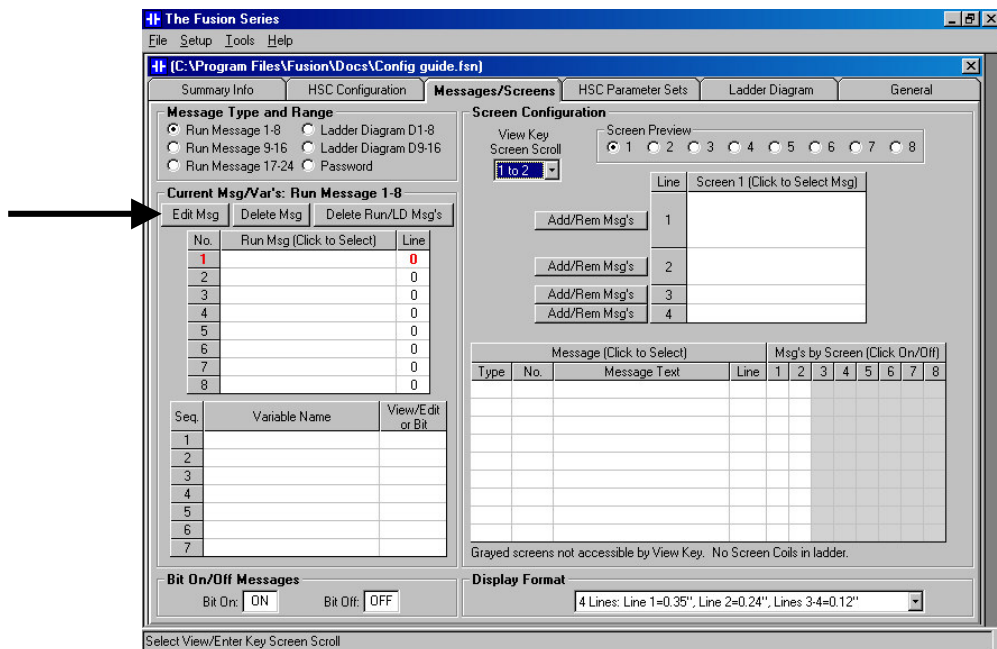
Step 4: pick a message type and message number.

Run message #1 is as good a place to start as any.

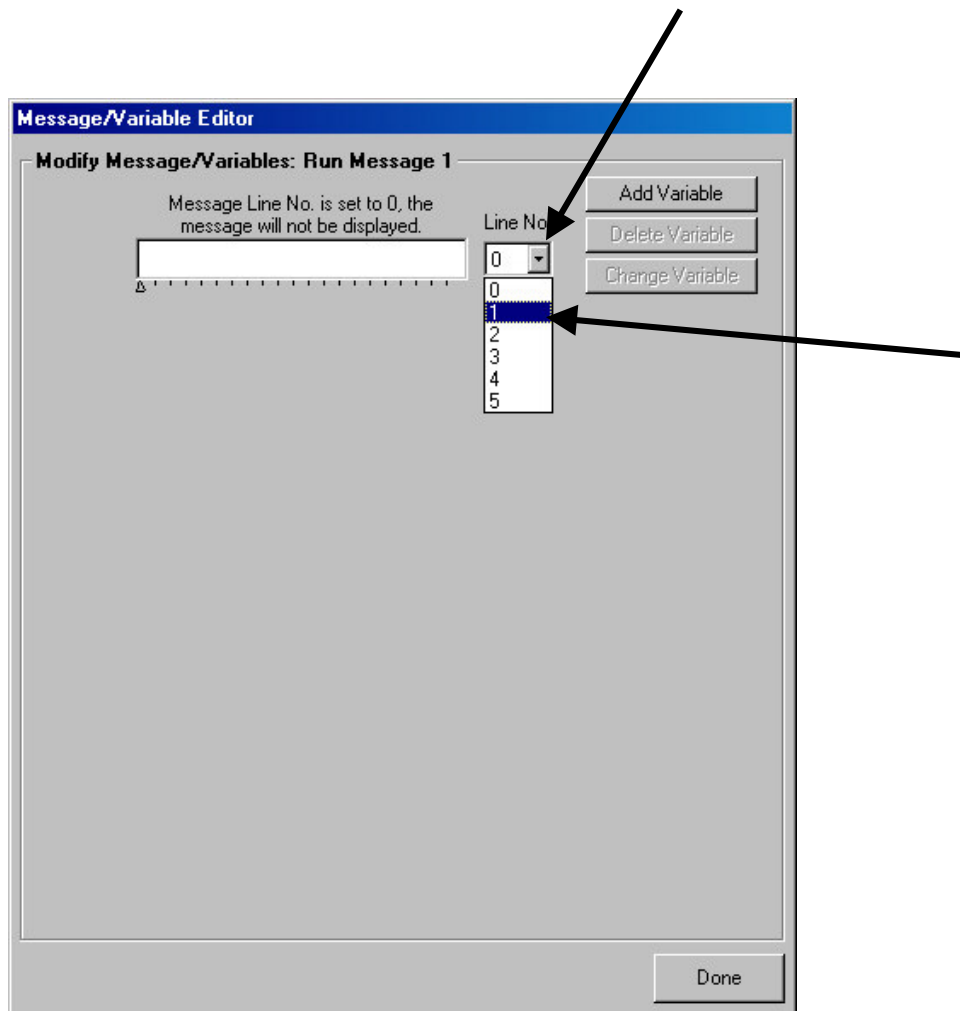


Step 5: assemble the message.

Click the Edit Msg button



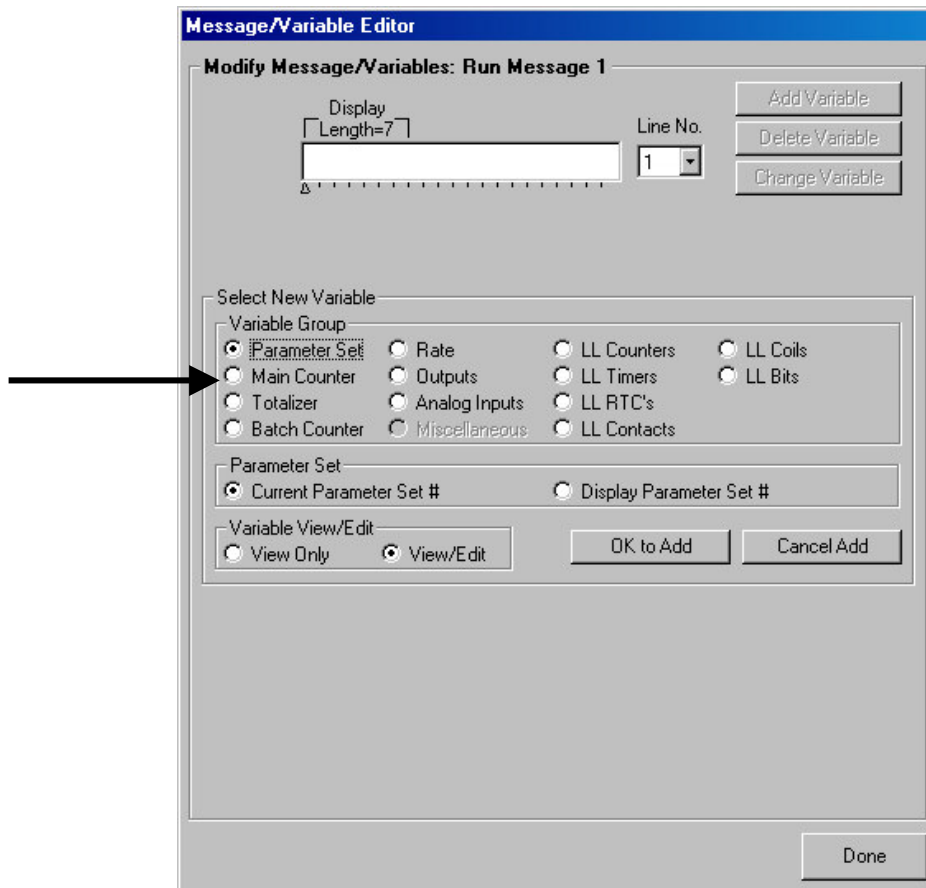
The message editing screen will appear. Click on the Line No. drop down button to assign this message to line 1.



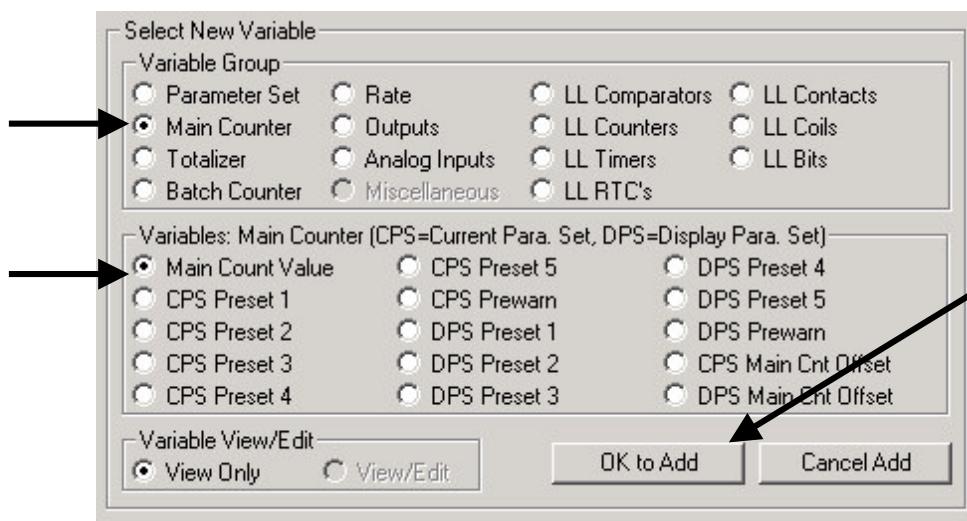
Then click the cursor into the left-most space in the message editing box. Seven characters will fit on line 1 according to the display format chosen. More characters can be included, but the character size will be automatically reduced to accommodate all characters programmed. Since the message on line 1 is the main count value (which is seven characters), and since the main count value is a variable, click on the Add Variable button.



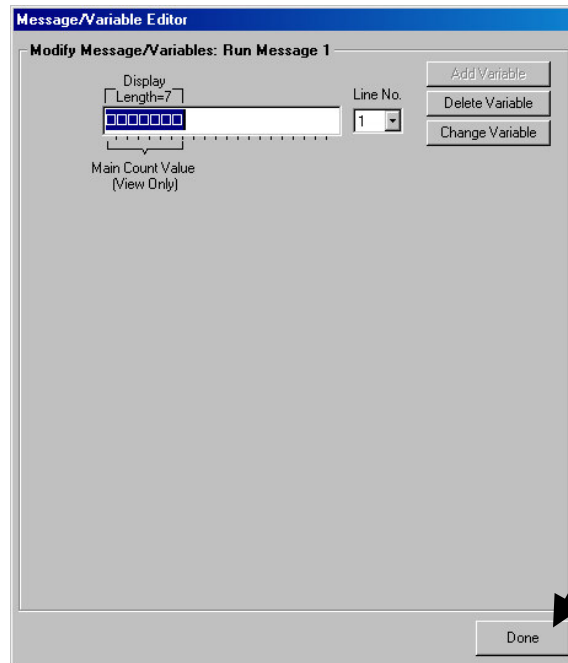
The main variable screen will appear, with the Parameter Set Group selected. Select the Main Counter variable group to get to the main count value variable.



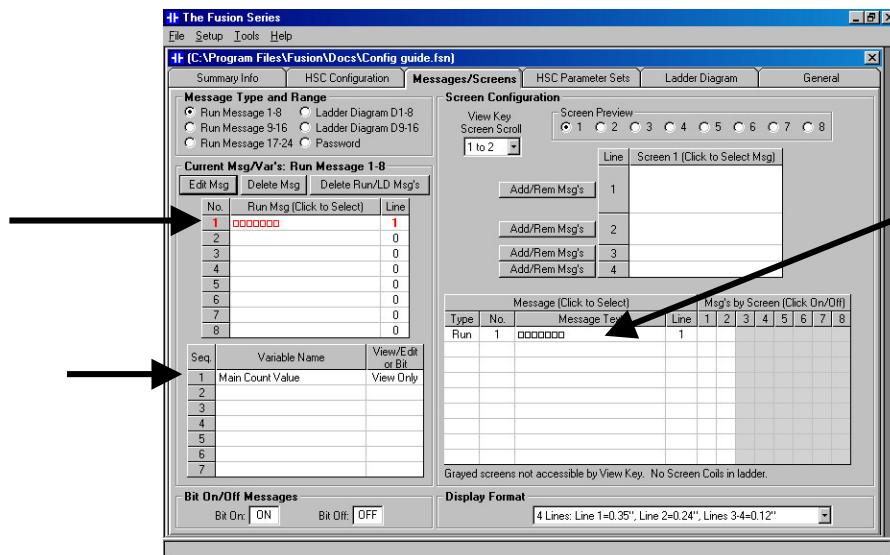
Once the Main Counter variable group is selected, the default item selected is the main count value. Click on the OK to Add button.



All variables are represented in the message editing box as rectangular space holders. Note that the main count value variable requires seven spaces, which completely fills line 1. With run message 1 completely assembled, click Done.

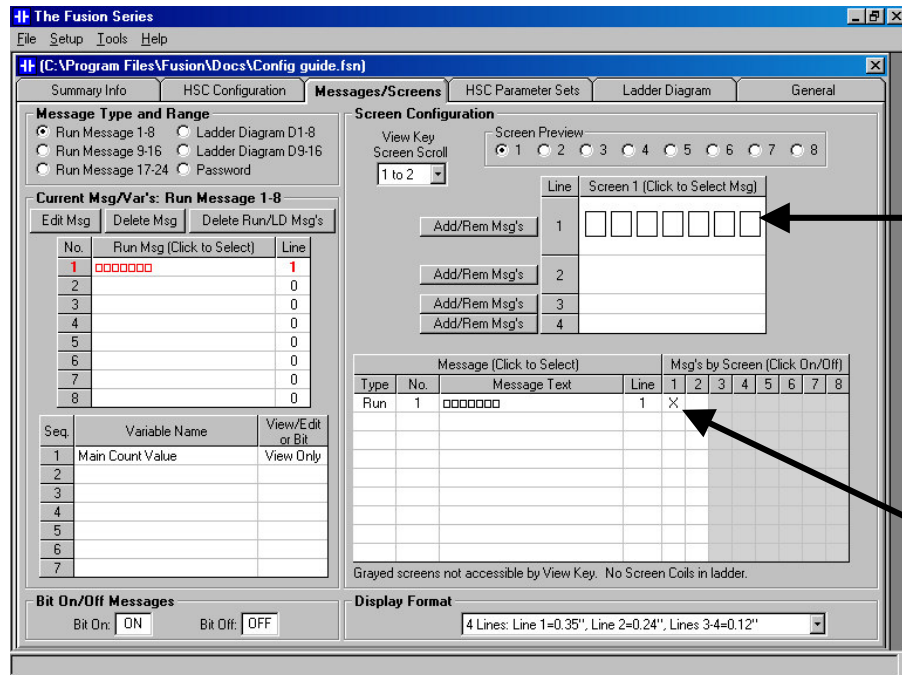


The main Messages / Screens screen appears, with run message 1 shown in the Current Msg list as a variable assigned to line 1. The Variable Name box below the message list identifies all variables in the selected message. The message also appears in the message screen selection box, waiting to be assigned to one or more screens.



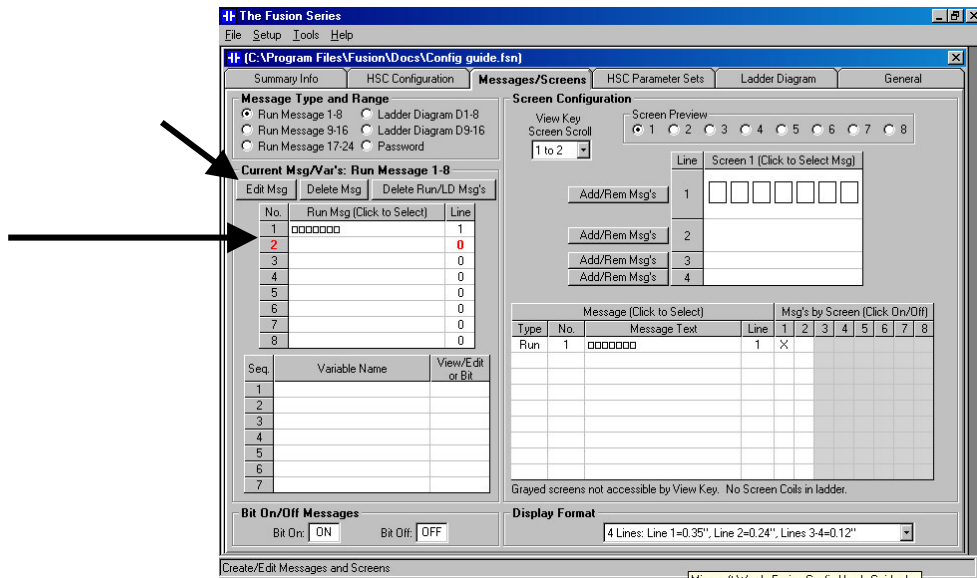
Step 6: assign the message to one or more screens.

To assign run message 1 to screen 1, simply click in column 1 in the Msg's by Screen box. The message will then appear in the screen preview box for all screens that it is assigned to.

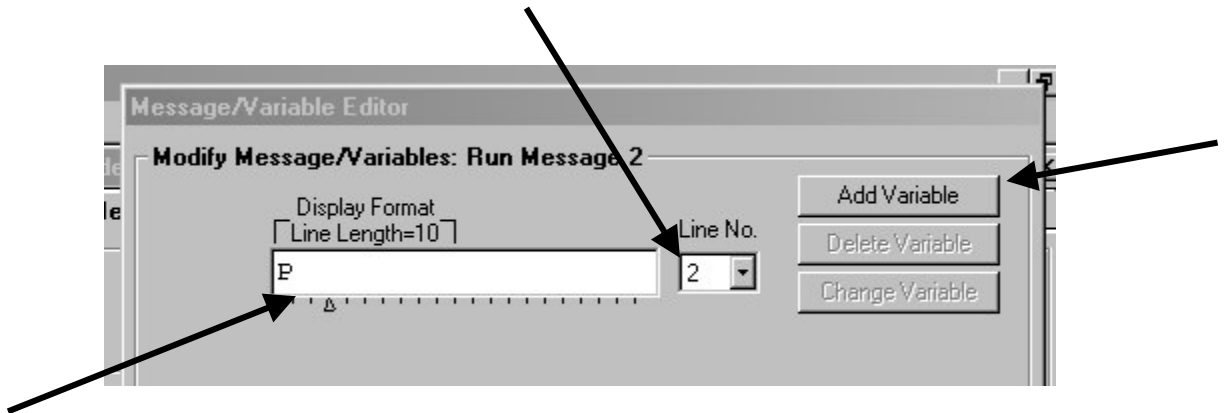


Step 7: repeat steps 4-6 for each remaining message.

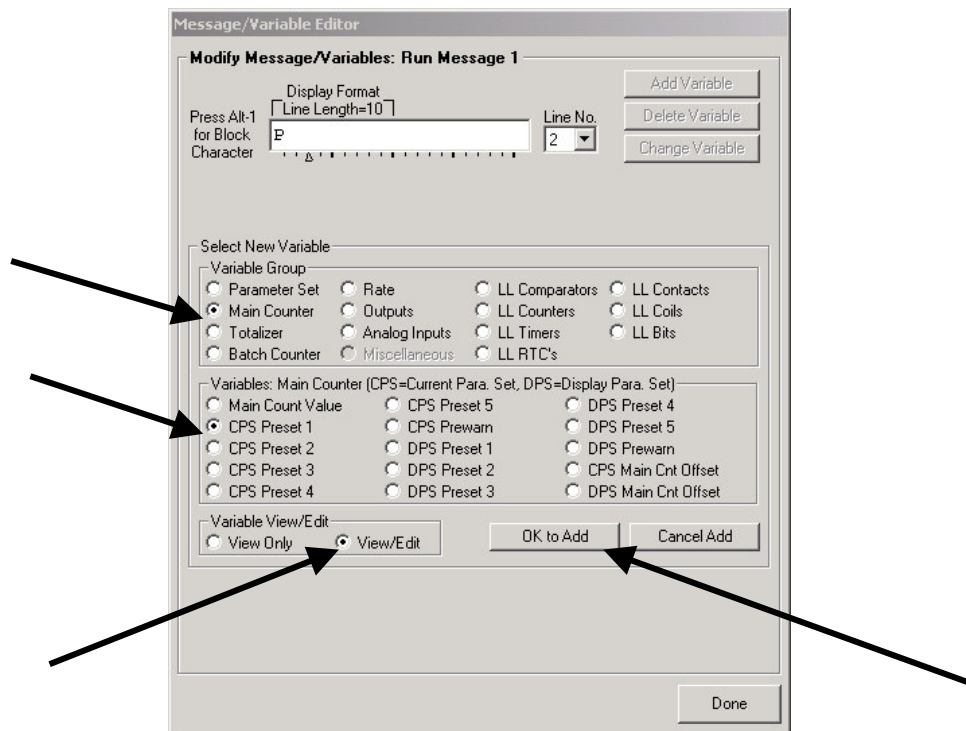
Select run message 2, and click Edit Msg.



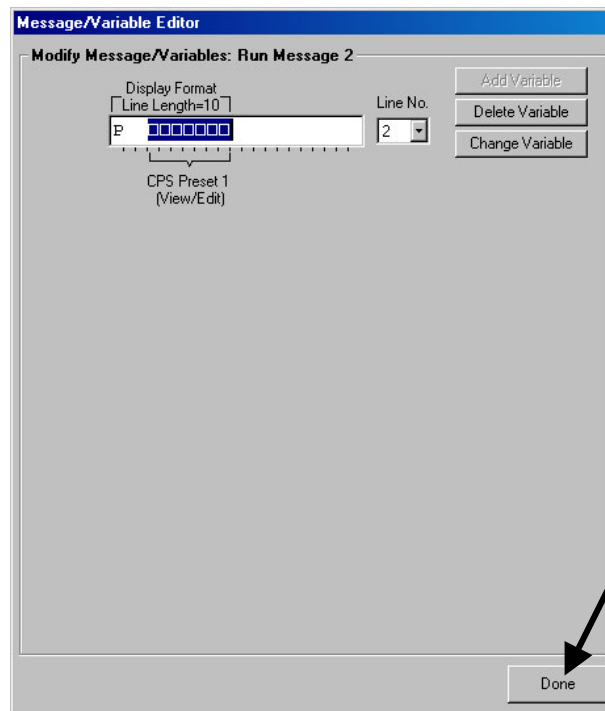
Assign message 2 to line 2. With ten characters to work with, and only seven required for Preset 1, type in a text identifier “P” and space, space. Then click on Add Variable.



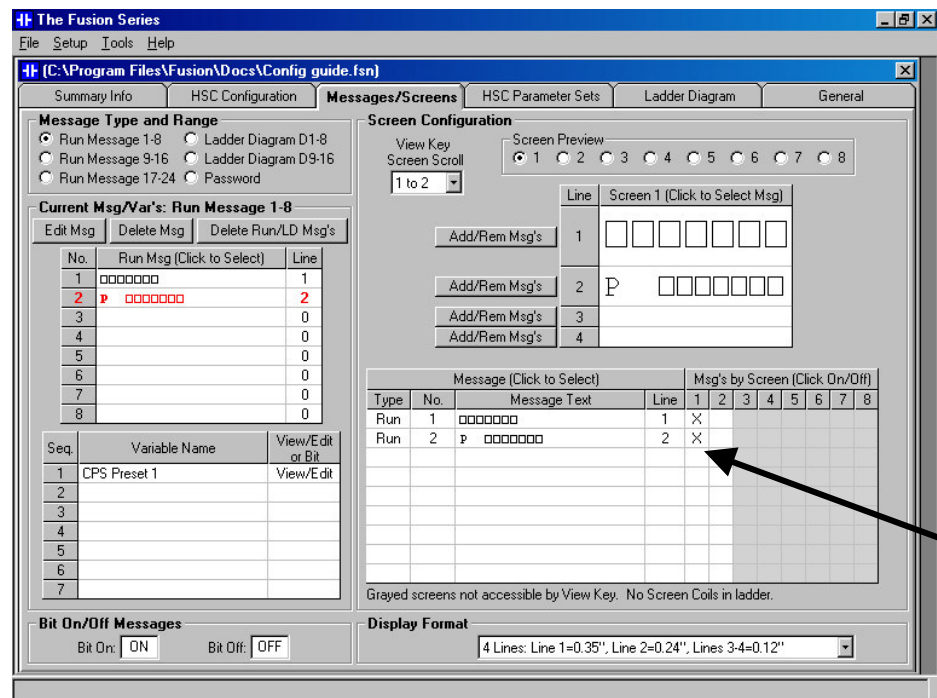
Select the Main Counter variable group, then select CPS (Current Parameter Set) Preset 1, and make it editable by the operator by selecting View/Edit. Then click OK to Add.



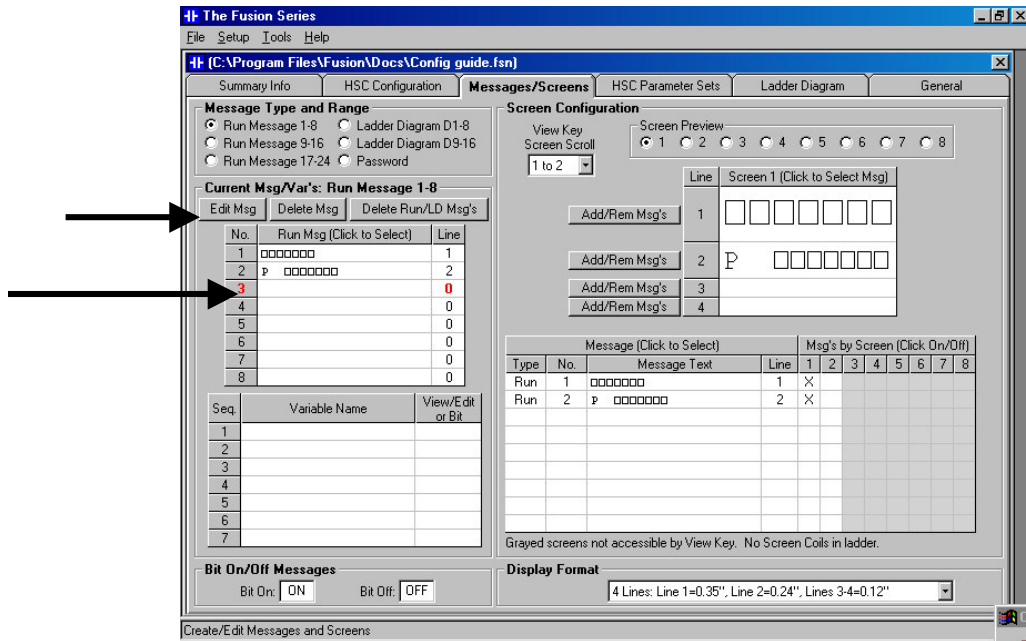
With the message completely assembled, click Done.



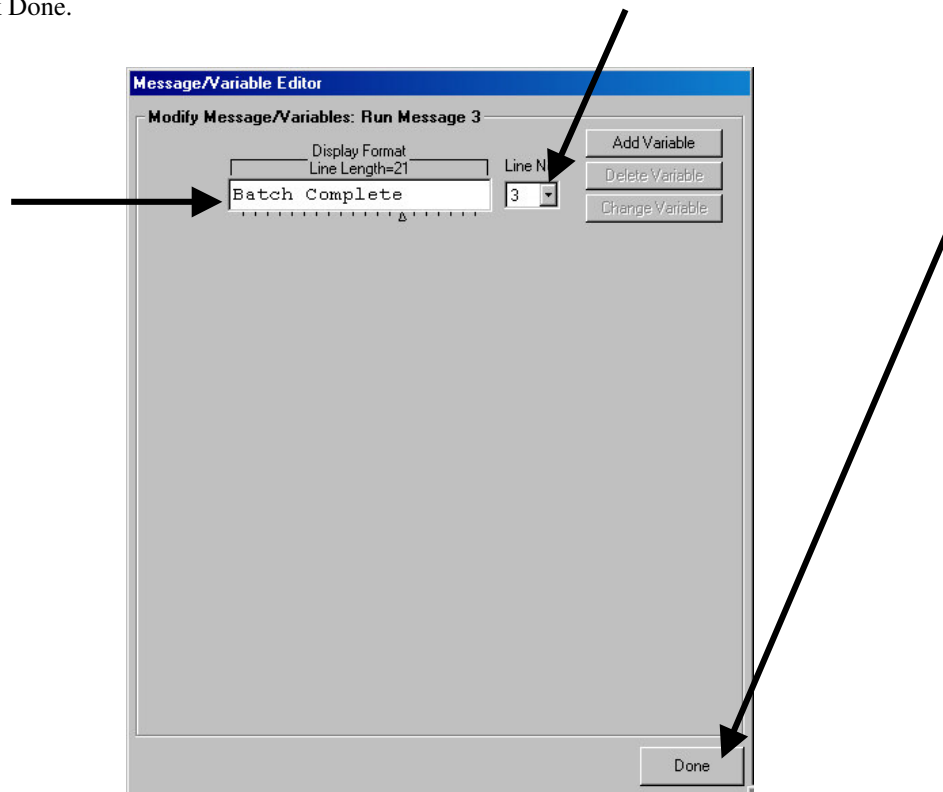
Assign run message 2 to screen 1.



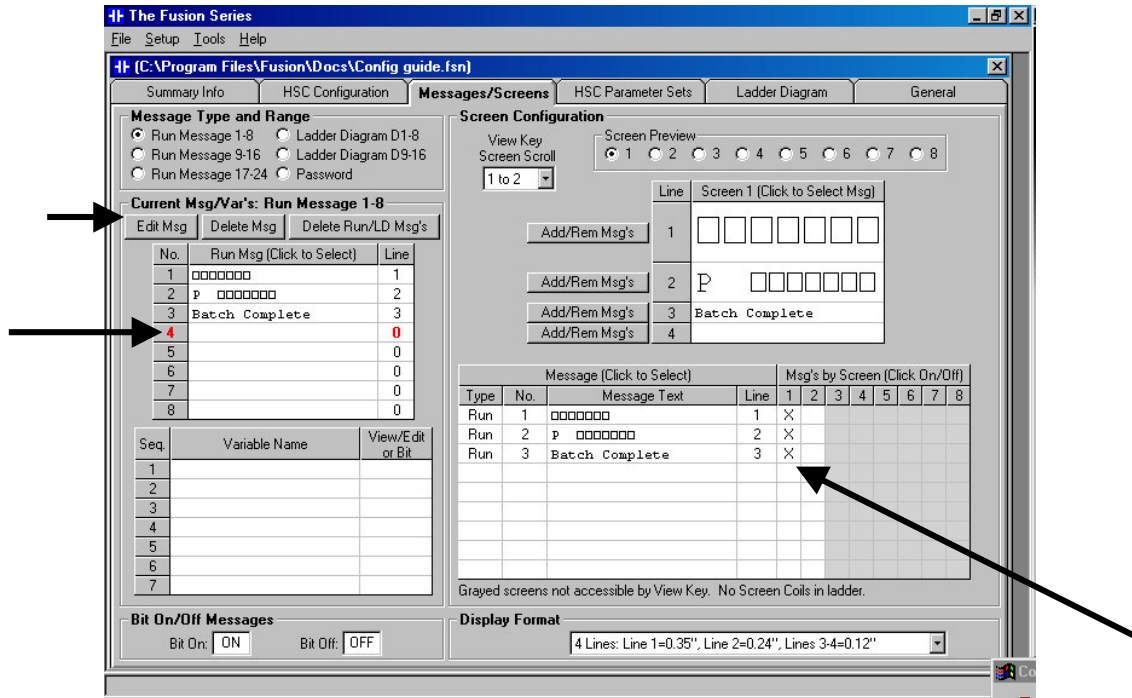
Select run message 3, and click Edit Msg.



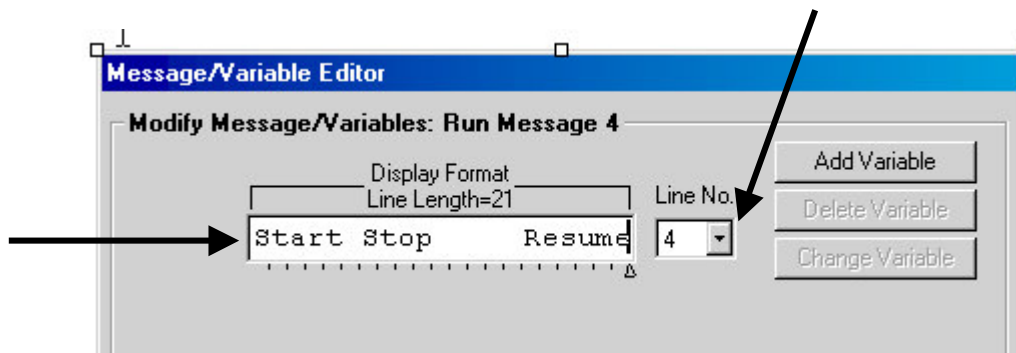
Assign the message to line three, then type the text message into the message editing box. Click Done.



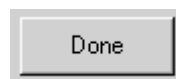
Assign the message to screen 1. Then select run message #4, and click Edit Msg.



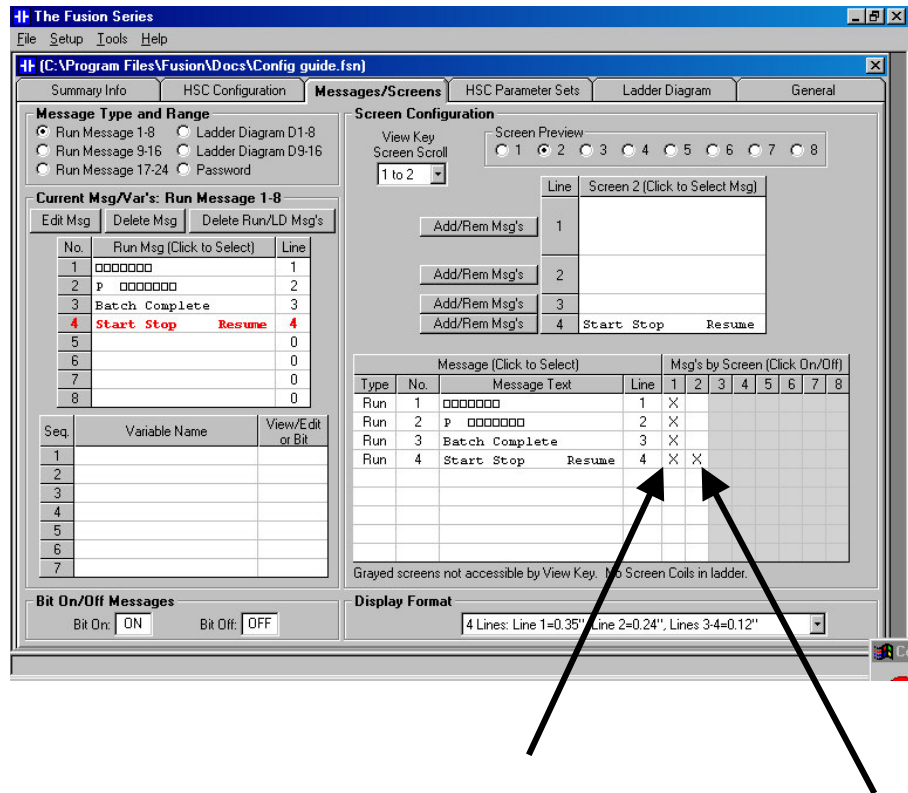
Assign the message to line four. Type in the text to identify keys B7, B8, and B10 as Start, Stop, and Resume, respectively.



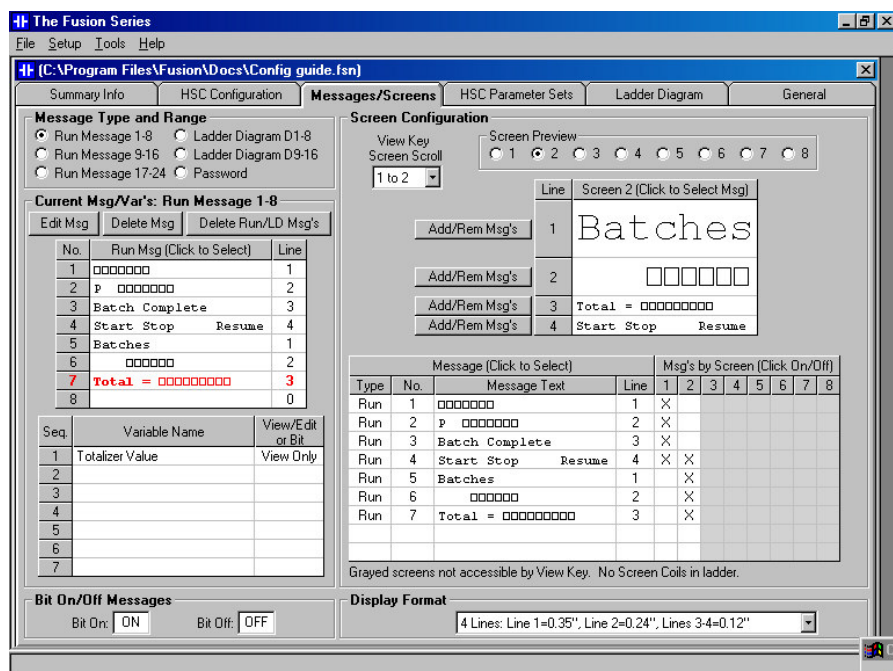
Click Done.



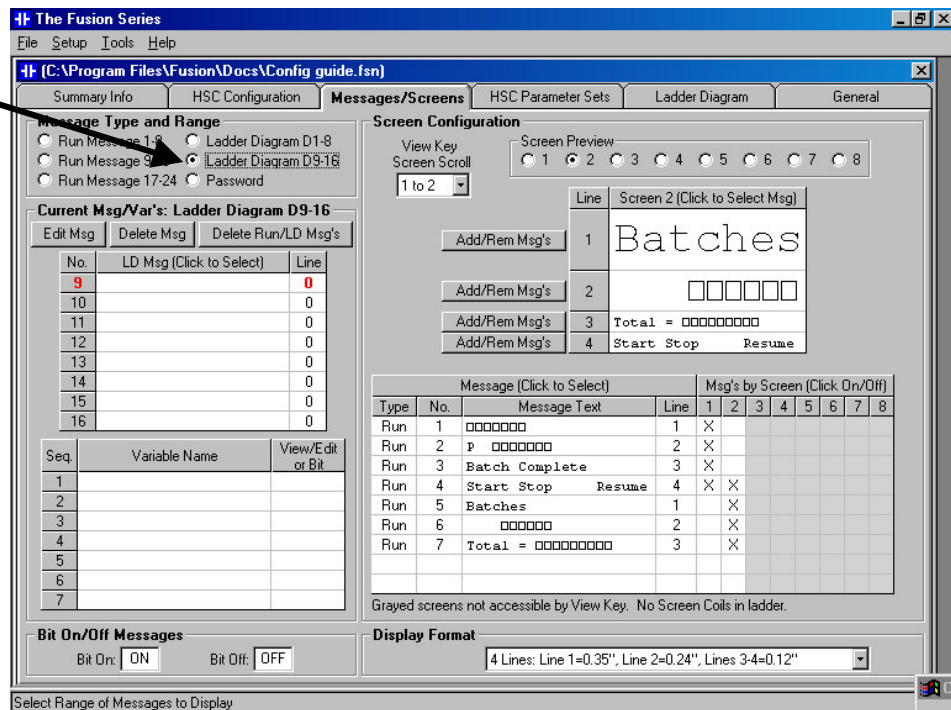
Assign this message to screens 1 and 2.



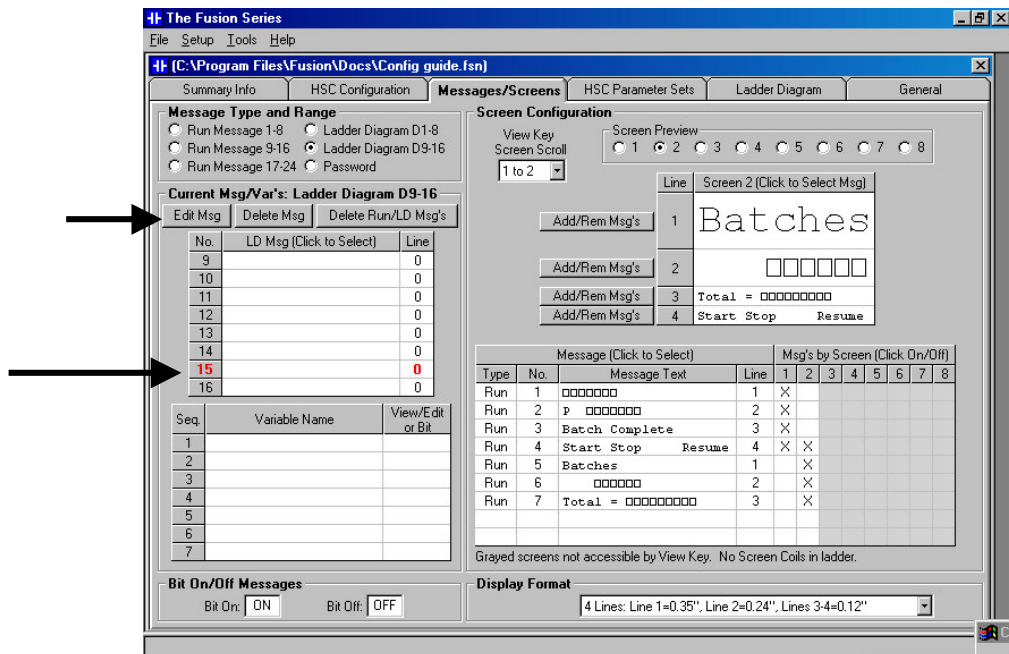
Add the remaining run messages in the same manner as messages 1-4.



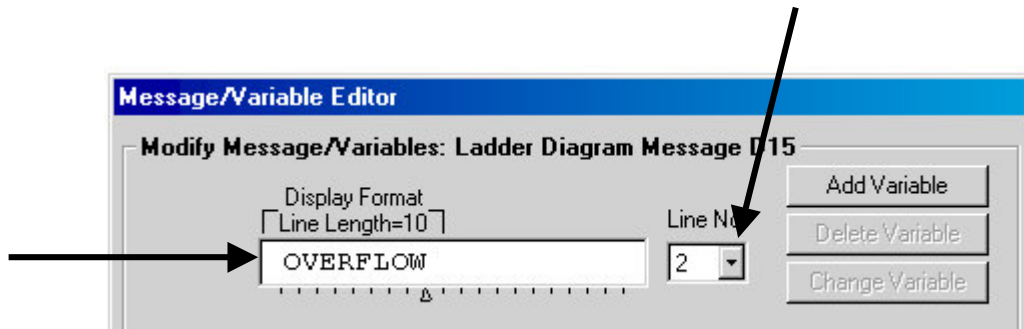
There are two remaining messages, both ladder messages. Assume that the OVERFLOW message is D15, and the Rate message is D16. Select Ladder Diagram 9-16 in the Message Type and Range box.



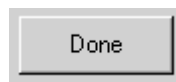
Then select ladder message 15 and click Edit Msg.



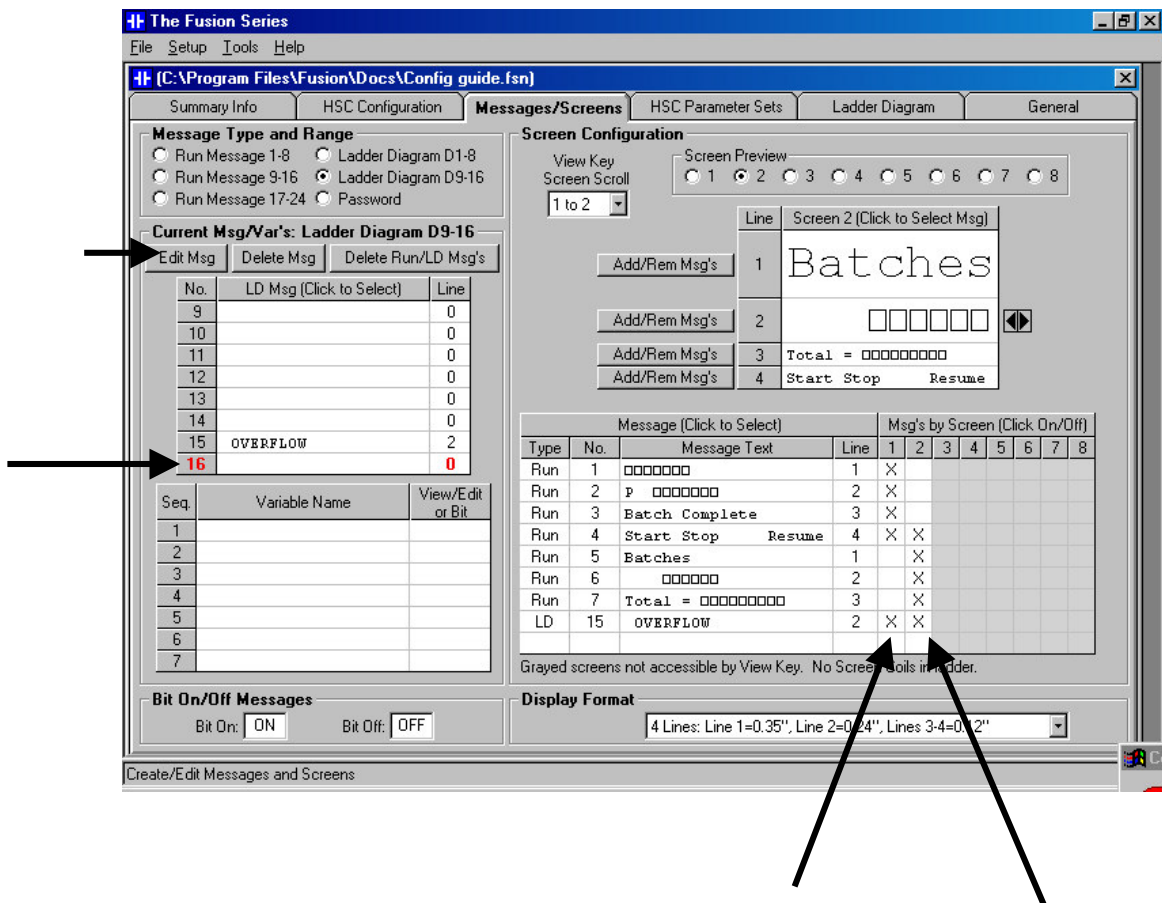
Assign the message to line 2, then type “OVERFLOW” into the message editing box.



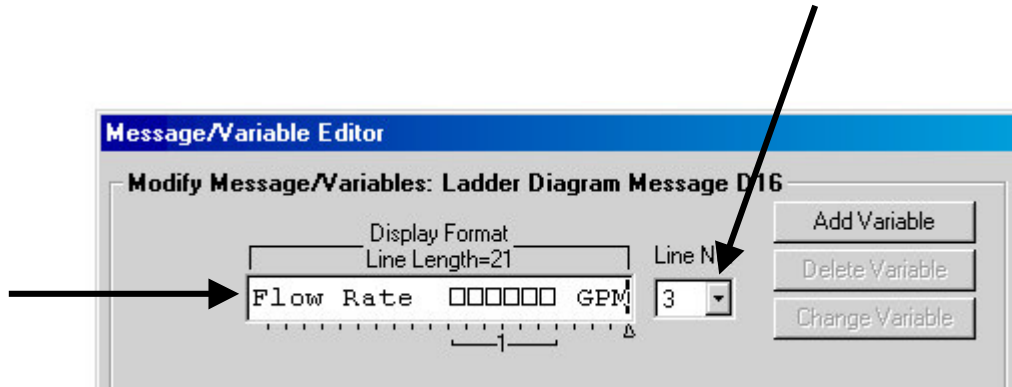
Click Done.



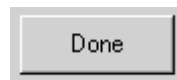
Assign the message to screens 1 and 2. Then select ladder message 16 and click Edit Msg.



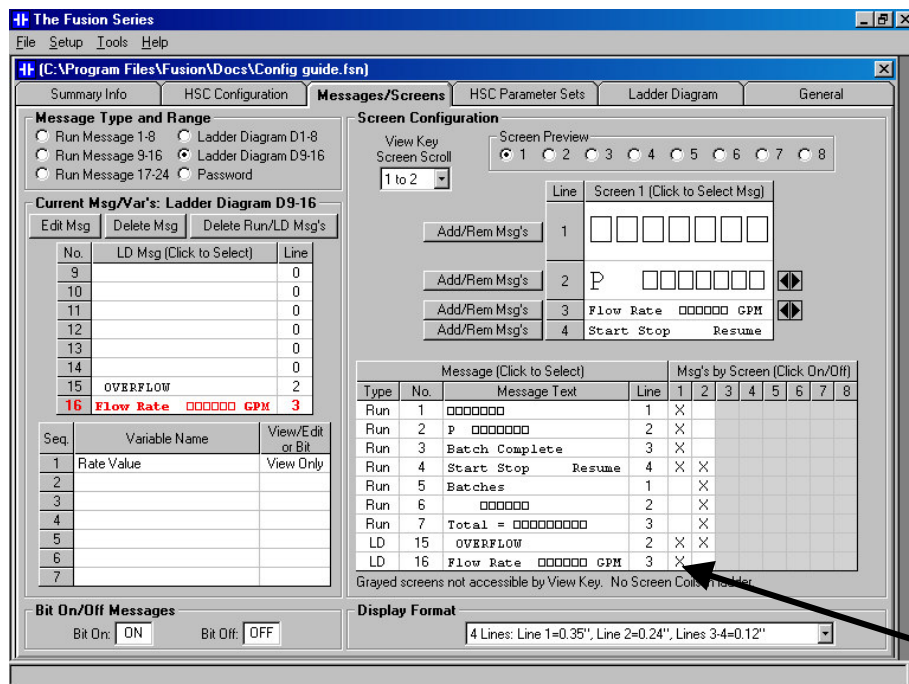
Assign ladder message 16 to line 3. Then type in identifying text (Flow Rate), space, space, add the rate variable, and rate units text.



Click Done.



Assign the message to screen 1.

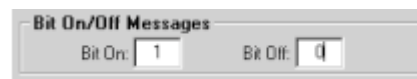


All messages have now been programmed. Note that the screen preview box for screen 1 shows that more than one message is programmed for lines 2 and 3, as indicated by the arrows to the right of these lines. Clicking on the arrow buttons will cause the other messages assigned to these lines to be previewed.

The final feature of the Messages / Screens screen is the displayed terms for the status of bits. Bits are the states of the ladder contacts and coils, which may be displayed in messages as variables. By default, the states are designated “ON” and “OFF”.



These designations can be changed to any three printable ASCII characters, such as “1” and “0”, or “Yes” and “No”.

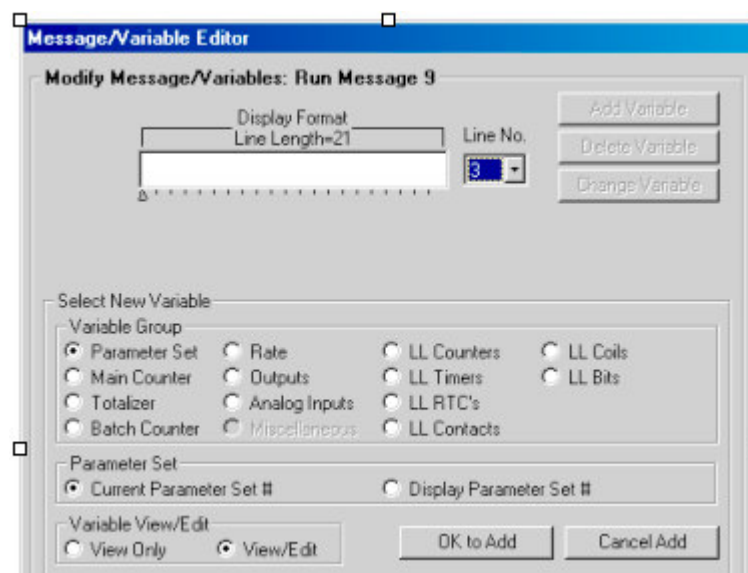


VARIABLE GROUPS

There are hundreds of HSC and ladder data items that can be displayed. Many of these variables are editable, such as presets. When these variables are included in a message, they may be selected as either VIEW ONLY, or as VIEW EDIT. If the operator needs to be able to change the value for a variable, it should be displayed as VIEW EDIT. All data items that can be displayed as variables are shown below. Rather than list every variable on a single screen, variables are grouped according to function. For instance, the main counter presets are part of the main counter variable group. To locate a variable for a message, first select the group that it is in. Then all the individual variables that are in the selected group will appear, and the specific variable can be chosen to add to the message. For those variables that are editable, the VIEW ONLY or VIEW EDIT choice is made at this time.

VARIABLE LOCATOR REFERENCE

When the Add Variable button is clicked while programming a message, the list of variable groups appears. By default, the Parameter Set variable group is shown. There are only two variables in this group. Click on the one needed for the message, and select VIEW ONLY or VIEW EDIT to add one of these variables to the message. For any other variable, first select the variable group that it is in.



Main Counter Variable Group

Select New Variable

Variable Group

<input type="radio"/> Parameter Set	<input type="radio"/> Rate	<input type="radio"/> LL Comparators	<input type="radio"/> LL Contacts
<input checked="" type="radio"/> Main Counter	<input type="radio"/> Outputs	<input type="radio"/> LL Counters	<input type="radio"/> LL Coils
<input type="radio"/> Totalizer	<input type="radio"/> Analog Inputs	<input type="radio"/> LL Timers	<input type="radio"/> LL Bits
<input type="radio"/> Batch Counter	<input type="radio"/> Miscellaneous	<input type="radio"/> LL RTC's	

Variables: Main Counter (CPS=Current Para. Set, DPS=Display Para. Set)

<input checked="" type="radio"/> Main Count Value	<input type="radio"/> CPS Prewarn	<input type="radio"/> DPS Prewarn
<input type="radio"/> CPS Preset 1	<input type="radio"/> DPS Preset 1	<input type="radio"/> CPS Main Cnt Offset
<input type="radio"/> CPS Preset 2	<input type="radio"/> DPS Preset 2	<input type="radio"/> DPS Main Cnt Offset
<input type="radio"/> CPS Preset 3	<input type="radio"/> DPS Preset 3	<input type="radio"/> Count Scale
<input type="radio"/> CPS Preset 4	<input type="radio"/> DPS Preset 4	<input type="radio"/> Count DP
<input type="radio"/> CPS Preset 5	<input type="radio"/> DPS Preset 5	

Variable View/Edit

☒ View Only ☐ View/Edit

OK to Add Cancel Add

Totalizer Variable Group

Select New Variable

Variable Group

<input type="radio"/> Parameter Set	<input type="radio"/> Rate	<input type="radio"/> LL Comparators	<input type="radio"/> LL Contacts
<input type="radio"/> Main Counter	<input type="radio"/> Outputs	<input type="radio"/> LL Counters	<input type="radio"/> LL Coils
<input checked="" type="radio"/> Totalizer	<input type="radio"/> Analog Inputs	<input type="radio"/> LL Timers	<input type="radio"/> LL Bits
<input type="radio"/> Batch Counter	<input type="radio"/> Miscellaneous	<input type="radio"/> LL RTC's	

Variables: Totalizer (CPS=Current Para. Set, DPS=Display Para. Set)

<input type="radio"/> Totalizer Value	<input type="radio"/> CPS Totalizer Offset
<input checked="" type="radio"/> CPS Totalizer Preset	<input type="radio"/> DPS Totalizer Offset
<input type="radio"/> DPS Totalizer Preset	

Variable View/Edit

☐ View Only ☒ View/Edit

OK to Add Cancel Add

Batch Counter Variable Group

Select New Variable

Variable Group

<input type="radio"/> Parameter Set	<input type="radio"/> Rate	<input type="radio"/> LL Comparators	<input type="radio"/> LL Contacts
<input type="radio"/> Main Counter	<input type="radio"/> Outputs	<input type="radio"/> LL Counters	<input type="radio"/> LL Coils
<input type="radio"/> Totalizer	<input type="radio"/> Analog Inputs	<input type="radio"/> LL Timers	<input type="radio"/> LL Bits
<input checked="" type="radio"/> Batch Counter	<input type="radio"/> Miscellaneous	<input type="radio"/> LL RTC's	

Variables: Batch Counter (CPS=Current Para. Set, DPS=Display Para. Set)

<input type="radio"/> Batch Count Value	<input checked="" type="radio"/> CPS Batch Preset	<input type="radio"/> DPS Batch Preset
---	---	--

Variable View/Edit

☐ View Only ☒ View/Edit

OK to Add Cancel Add

Rate Variable Group

Select New Variable

Variable Group

<input type="radio"/> Parameter Set	<input checked="" type="radio"/> Rate	<input type="radio"/> LL Comparators	<input type="radio"/> LL Contacts
<input type="radio"/> Main Counter	<input type="radio"/> Outputs	<input type="radio"/> LL Counters	<input type="radio"/> LL Coils
<input type="radio"/> Totalizer	<input type="radio"/> Analog Inputs	<input type="radio"/> LL Timers	<input type="radio"/> LL Bits
<input type="radio"/> Batch Counter	<input type="radio"/> Miscellaneous	<input type="radio"/> LL RTC's	

Variables: Rate (CPS=Current Para. Set, DPS=Display Para. Set)

<input checked="" type="radio"/> Rate Value	<input type="radio"/> DPS Rate Low Preset
<input type="radio"/> CPS Rate High Preset	<input type="radio"/> Rate Scale
<input type="radio"/> CPS Rate Low Preset	<input type="radio"/> Rate DP
<input type="radio"/> DPS Rate High Preset	

Variable View/Edit

<input checked="" type="radio"/> View Only	<input type="radio"/> View/Edit
--	---------------------------------

OK to Add Cancel Add

Outputs Variable Group

Select New Variable

Variable Group

<input type="radio"/> Parameter Set	<input type="radio"/> Rate	<input type="radio"/> LL Comparators	<input type="radio"/> LL Contacts
<input type="radio"/> Main Counter	<input checked="" type="radio"/> Outputs	<input type="radio"/> LL Counters	<input type="radio"/> LL Coils
<input type="radio"/> Totalizer	<input type="radio"/> Analog Inputs	<input type="radio"/> LL Timers	<input type="radio"/> LL Bits
<input type="radio"/> Batch Counter	<input type="radio"/> Miscellaneous	<input type="radio"/> LL RTC's	

Variables: Outputs

<input type="radio"/> Output Timer Value	<input type="radio"/> Analog Output Off Value
<input checked="" type="radio"/> Output Timer Preset	<input type="radio"/> Analog Output Prewarn Value
<input type="radio"/> Analog Output On Value	

Number

<input checked="" type="radio"/> 1 Relay Out (Form C)	<input type="radio"/> 6 Transistor Out
<input type="radio"/> 2 Relay Out (Form C)	<input type="radio"/> 7 Transistor Out
<input type="radio"/> 3 Relay Out (Form C)	<input type="radio"/> 8 Analog Out (4-20mA)
<input type="radio"/> 4 Relay Out (Form A)	<input type="radio"/> 9 Analog Out (0-10V)
<input type="radio"/> 5 Relay Out (Form A)	

Variable View/Edit

<input checked="" type="radio"/> View Only	<input type="radio"/> View/Edit
--	---------------------------------

OK to Add Cancel Add

Analog Inputs Variable Group

Select New Variable

Variable Group

<input type="radio"/> Parameter Set	<input type="radio"/> Rate	<input type="radio"/> LL Comparators	<input type="radio"/> LL Contacts
<input type="radio"/> Main Counter	<input type="radio"/> Outputs	<input type="radio"/> LL Counters	<input type="radio"/> LL Coils
<input type="radio"/> Totalizer	<input checked="" type="radio"/> Analog Inputs	<input type="radio"/> LL Timers	<input type="radio"/> LL Bits
<input type="radio"/> Batch Counter	<input type="radio"/> Miscellaneous	<input type="radio"/> LL RTC's	

Variables: Analog Inputs

<input type="radio"/> Analog Input 11 Value	<input type="radio"/> Analog Input 13 Value
<input checked="" type="radio"/> Analog Input 12 Value	<input type="radio"/> Analog Input 14 Value

Variable View/Edit

☒ View Only ☐ View/Edit

OK to Add Cancel Add

Analog Comparators Variable Group

Select New Variable

Variable Group

<input type="radio"/> Parameter Set	<input type="radio"/> Rate	<input checked="" type="radio"/> LL Comparators	<input type="radio"/> LL Contacts
<input type="radio"/> Main Counter	<input type="radio"/> Outputs	<input type="radio"/> LL Counters	<input type="radio"/> LL Coils
<input type="radio"/> Totalizer	<input type="radio"/> Analog Inputs	<input type="radio"/> LL Timers	<input type="radio"/> LL Bits
<input type="radio"/> Batch Counter	<input type="radio"/> Miscellaneous	<input type="radio"/> LL RTC's	

Variables: LL Comparators

<input type="radio"/> A1 Constant	<input type="radio"/> A3 Constant	<input type="radio"/> A5 Constant	<input type="radio"/> A7 Constant
<input checked="" type="radio"/> A2 Constant	<input type="radio"/> A4 Constant	<input type="radio"/> A6 Constant	<input type="radio"/> A8 Constant

Variable View/Edit

☒ View Only ☐ View/Edit

OK to Add Cancel Add

Ladder Counters Variable Group

Select New Variable

Variable Group

<input type="radio"/> Parameter Set	<input type="radio"/> Rate	<input type="radio"/> LL Comparators	<input type="radio"/> LL Contacts
<input type="radio"/> Main Counter	<input type="radio"/> Outputs	<input checked="" type="radio"/> LL Counters	<input type="radio"/> LL Coils
<input type="radio"/> Totalizer	<input type="radio"/> Analog Inputs	<input type="radio"/> LL Timers	<input type="radio"/> LL Bits
<input type="radio"/> Batch Counter	<input type="radio"/> Miscellaneous	<input type="radio"/> LL RTC's	

Variables: LL Counters

☐ Value ☒ Preset

Number

☒ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8

Variable View/Edit

☒ View Only ☐ View/Edit

OK to Add Cancel Add

Ladder Timers Variable Group

Select New Variable

Variable Group

<input type="radio"/> Parameter Set	<input type="radio"/> Rate	<input type="radio"/> LL Comparators	<input type="radio"/> LL Contacts
<input type="radio"/> Main Counter	<input type="radio"/> Outputs	<input type="radio"/> LL Counters	<input type="radio"/> LL Coils
<input type="radio"/> Totalizer	<input type="radio"/> Analog Inputs	<input checked="" type="radio"/> LL Timers	<input type="radio"/> LL Bits
<input type="radio"/> Batch Counter	<input type="radio"/> Miscellaneous	<input type="radio"/> LL RTC's	

Variables: LL Timers

☐ Value ☒ Preset

Number

☒ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8

Variable View/Edit

☒ View Only ☐ View/Edit

OK to Add Cancel Add

Ladder Real Time Clock Variable Group

Select New Variable

Variable Group

<input type="radio"/> Parameter Set	<input type="radio"/> Rate	<input type="radio"/> LL Comparators	<input type="radio"/> LL Contacts
<input type="radio"/> Main Counter	<input type="radio"/> Outputs	<input type="radio"/> LL Counters	<input type="radio"/> LL Coils
<input type="radio"/> Totalizer	<input type="radio"/> Analog Inputs	<input type="radio"/> LL Timers	<input type="radio"/> LL Bits
<input type="radio"/> Batch Counter	<input type="radio"/> Miscellaneous	<input checked="" type="radio"/> LL RTC's	

Variables: LL RTC's

<input type="radio"/> Date Value (MM-DD-YY)	<input type="radio"/> Date Value (DD/MM/YY)
<input checked="" type="radio"/> Long Time Value (12:59:59A)	<input type="radio"/> Long Time Value (23:59:59)
<input type="radio"/> Short Time Value (12:59A)	<input type="radio"/> Short Time Value (23:59)
<input type="radio"/> Day-of-Week Value	

Variable View/Edit

☒ View Only ☐ View/Edit

OK to Add Cancel Add

Ladder Contacts Variable Group

Select New Variable

Variable Group

<input type="radio"/> Parameter Set	<input type="radio"/> Rate	<input type="radio"/> LL Comparators	<input checked="" type="radio"/> LL Contacts
<input type="radio"/> Main Counter	<input type="radio"/> Outputs	<input type="radio"/> LL Counters	<input type="radio"/> LL Coils
<input type="radio"/> Totalizer	<input type="radio"/> Analog Inputs	<input type="radio"/> LL Timers	<input type="radio"/> LL Bits
<input type="radio"/> Batch Counter	<input type="radio"/> Miscellaneous	<input type="radio"/> LL RTC's	

Variables: LL Contacts

<input type="radio"/> A1-8 Comparators	<input type="radio"/> I1-10 Inputs	<input type="radio"/> T1-8 Timers
<input checked="" type="radio"/> B1-11 Buttons	<input type="radio"/> I15-17 Inputs	<input type="radio"/> X1-4 HSC
<input type="radio"/> C1-8 Counters	<input type="radio"/> R1-8 RTC's	

Variable View/Edit

☒ View Only ☐ View/Edit

OK to Add Cancel Add

Ladder Coils Variable Group

Select New Variable

Variable Group

<input type="radio"/> Parameter Set	<input type="radio"/> Rate	<input type="radio"/> LL Comparators	<input type="radio"/> LL Contacts
<input type="radio"/> Main Counter	<input type="radio"/> Outputs	<input type="radio"/> LL Counters	<input checked="" type="radio"/> LL Coils
<input type="radio"/> Totalizer	<input type="radio"/> Analog Inputs	<input type="radio"/> LL Timers	<input type="radio"/> LL Bits
<input type="radio"/> Batch Counter	<input type="radio"/> Miscellaneous	<input type="radio"/> LL RTC's	

Variables: LL Coils

<input type="radio"/> H1-7 HSC	<input type="radio"/> M1-8 Memory	<input type="radio"/> N9-16 Memory
<input checked="" type="radio"/> K1-9 Outputs	<input type="radio"/> M9-16 Memory	<input type="radio"/> U1-9 Unlatch
<input type="radio"/> L1-9 Latch	<input type="radio"/> N1-8 Memory	

Variable View/Edit

☒ View Only ☐ View/Edit

OK to Add Cancel Add

Ladder Bits Variable Group

Select New Variable

Variable Group

<input type="radio"/> Parameter Set	<input type="radio"/> Rate	<input type="radio"/> LL Comparators	<input type="radio"/> LL Contacts
<input type="radio"/> Main Counter	<input type="radio"/> Outputs	<input type="radio"/> LL Counters	<input type="radio"/> LL Coils
<input type="radio"/> Totalizer	<input type="radio"/> Analog Inputs	<input type="radio"/> LL Timers	<input checked="" type="radio"/> LL Bits
<input type="radio"/> Batch Counter	<input type="radio"/> Miscellaneous	<input type="radio"/> LL RTC's	

Variables: LL Bits

<input type="radio"/> Contact Type A	<input type="radio"/> Contact Type R	<input type="radio"/> Coil Type K	<input type="radio"/> Coil Type U
<input checked="" type="radio"/> Contact Type B	<input type="radio"/> Contact Type T	<input type="radio"/> Coil Type L	
<input type="radio"/> Contact Type C	<input type="radio"/> Contact Type X	<input type="radio"/> Coil Type M	
<input type="radio"/> Contact Type I	<input type="radio"/> Coil Type H	<input type="radio"/> Coil Type N	

Number

<input checked="" type="radio"/> 1 F1 Key	<input type="radio"/> 6 F6 Key	<input type="radio"/> 11 Reset Key
<input type="radio"/> 2 F2 Key	<input type="radio"/> 7 Soft Key (Left)	
<input type="radio"/> 3 F3 Key	<input type="radio"/> 8 Soft Key	
<input type="radio"/> 4 F4 Key	<input type="radio"/> 9 Soft Key	
<input type="radio"/> 5 F5 Key	<input type="radio"/> 10 Soft Key (Right)	

OK to Add Cancel Add

HSC Parameter Sets

A parameter set consists of the values for the ten presets and the two offsets used by the Fusion. Most configuration programs that use the Fusion's high speed counter will use at least one parameter set, although very few programs will use all ten presets.

Preset 1	Preset 2	Preset 3	Preset 4	Preset 5	Prewarn	Batch Preset	Totalizer Preset	Main Cnt Offset	Totalizer Offset	RH Preset	RL Preset
00000.0	00000.0	00000.0	00000.0	00000.0	0000.0	000000	0000000.0	00000.0	0000000.0	9999.9	0000.0

The ten presets and two offsets, and the values that make up the default parameter set.

There are two reasons to address parameter sets in the configuration program. First, one or more preset or offset values used in the program must be changed from the default value and those presets are not to be editable by the operator. Second, the configuration program may be set up to use more than one parameter set.

To change preset / offset values from default, enter the new value in the appropriate preset editing box in the Modify Parameter Set Value field.

The screenshot shows the 'HSC Parameter Sets' configuration window. The 'Parameter Value Selection' section on the right lists various parameters (Preset 1 through Preset 5, Batch Preset, Totalizer Preset, Main Cnt Offset, Totalizer Offset, Rate High Preset, Rate Low Preset) with dropdown menus set to 'Para. Set 1 Only'. The 'Current HSC Parameter Sets' table at the bottom shows a list of parameter sets (Copy, Paste 2 through Paste 10) with their respective values for Preset 1 through Preset 5, Prewarn, Batch Preset, Totalizer Preset, Main Cnt Offset, Totalizer Offset, RH Preset, and RL Preset. The status bar at the bottom indicates 'Enter Preset 3 for Parameter Set 1. Range: 00000.0 to 99999.9.'

The new value is saved when Enter is pressed, or when another field is selected.

If the configuration program is to use more than one parameter set, first select the number of parameter sets needed.



The Fusion Series

File Setup Tools Help

(C:\Program Files\Fusion\Docs\Config guide.fsn)

Summary Info HSC Configuration Messages/Screens HSC Parameter Sets Ladder Diagram General

Modify Parameter Set Values

Para. Sets Max. Used: 4

Value (Para. Set 1) Batch Preset: 000000.0

Preset 1: 00000.0 Totalizer Preset: 0000000.0

Preset 2: 00000.0 Main Cnt Offset: 00000.0

Preset 3: 00050.0 Totalizer Offset: 0000000.0

Preset 4: 00000.0 Rate High Preset: 9999.9

Preset 5: 00000.0 Rate Low Preset: 0000.0

Prewarm: 0000.0

Parameter Value Selection

Use Value From Use Value From

Preset 1: Para. Set 1 Only Batch Preset: Para. Set 1 Only

Preset 2: Para. Set 1 Only Totalizer Preset: Para. Set 1 Only

Preset 3: Para. Set 1 Only Main Cnt Offset: Para. Set 1 Only

Preset 4: Para. Set 1 Only Totalizer Offset: Para. Set 1 Only

Preset 5: Para. Set 1 Only Rate High Preset: Para. Set 1 Only

Prewarm: Para. Set 1 Only Rate Low Preset: Para. Set 1 Only

Current HSC Parameter Sets

Para Set	Preset 1	Preset 2	Preset 3	Preset 4	Preset 5	Prewarm	Batch Preset	Totalizer Preset	Main Cnt Offset	Totalizer Offset	RH Preset	RL Preset
Copy 1	00000.0	00000.0	00050.0	00000.0	00000.0	0000.0	000000	0000000.0	00000.0	0000000.0	9999.9	0000.0
Paste 2	00000.0	00000.0	00000.0	00000.0	00000.0	0000.0	000000	0000000.0	00000.0	0000000.0	9999.9	0000.0
Paste 3	00000.0	00000.0	00000.0	00000.0	00000.0	0000.0	000000	0000000.0	00000.0	0000000.0	9999.9	0000.0
Paste 4	00000.0	00000.0	00000.0	00000.0	00000.0	0000.0	000000	0000000.0	00000.0	0000000.0	9999.9	0000.0
Paste 5	00000.0	00000.0	00000.0	00000.0	00000.0	0000.0	000000	0000000.0	00000.0	0000000.0	9999.9	0000.0
Paste 6	00000.0	00000.0	00000.0	00000.0	00000.0	0000.0	000000	0000000.0	00000.0	0000000.0	9999.9	0000.0
Paste 7	00000.0	00000.0	00000.0	00000.0	00000.0	0000.0	000000	0000000.0	00000.0	0000000.0	9999.9	0000.0
Paste 8	00000.0	00000.0	00000.0	00000.0	00000.0	0000.0	000000	0000000.0	00000.0	0000000.0	9999.9	0000.0
Paste 9	00000.0	00000.0	00000.0	00000.0	00000.0	0000.0	000000	0000000.0	00000.0	0000000.0	9999.9	0000.0
Paste 10	00000.0	00000.0	00000.0	00000.0	00000.0	0000.0	000000	0000000.0	00000.0	0000000.0	9999.9	0000.0

Select Maximum Parameter Sets Used.

The selected number of parameter sets opens for value entry

The Fusion Series

File Setup Tools Help

(C:\Program Files\Fusion\Docs\Config guide.fsn)

Summary Info HSC Configuration Messages/Screens HSC Parameter Sets Ladder Diagram General

Modify Parameter Set Values

Para. Sets Max. Used: 4

Value (Para. Set 1) Batch Preset: 000000.0

Preset 1: 00000.0 Totalizer Preset: 0000000.0

Preset 2: 00000.0 Main Cnt Offset: 00000.0

Preset 3: 00050.0 Totalizer Offset: 0000000.0

Preset 4: 00000.0 Rate High Preset: 9999.9

Preset 5: 00000.0 Rate Low Preset: 0000.0

Prewarm: 0000.0

Parameter Value Selection

Use Value From Use Value From

Preset 1: Para. Set 1 Only Batch Preset: Para. Set 1 Only

Preset 2: Para. Set 1 Only Totalizer Preset: Para. Set 1 Only

Preset 3: Para. Set 1 Only Main Cnt Offset: Para. Set 1 Only

Preset 4: Para. Set 1 Only Totalizer Offset: Para. Set 1 Only

Preset 5: Para. Set 1 Only Rate High Preset: Para. Set 1 Only

Prewarm: Para. Set 1 Only Rate Low Preset: Para. Set 1 Only

Current HSC Parameter Sets

Para Set	Preset 1	Preset 2	Preset 3	Preset 4	Preset 5	Prewarm	Batch Preset	Totalizer Preset	Main Cnt Offset	Totalizer Offset	RH Preset	RL Preset
Copy 1	00000.0	00000.0	00050.0	00000.0	00000.0	0000.0	000000	0000000.0	00000.0	0000000.0	9999.9	0000.0
Paste 2	00000.0	00000.0	00000.0	00000.0	00000.0	0000.0	000000	0000000.0	00000.0	0000000.0	9999.9	0000.0
Paste 3	00000.0	00000.0	00000.0	00000.0	00000.0	0000.0	000000	0000000.0	00000.0	0000000.0	9999.9	0000.0
Paste 4	00000.0	00000.0	00000.0	00000.0	00000.0	0000.0	000000	0000000.0	00000.0	0000000.0	9999.9	0000.0
Paste 5	00000.0	00000.0	00000.0	00000.0	00000.0	0000.0	000000	0000000.0	00000.0	0000000.0	9999.9	0000.0
Paste 6	00000.0	00000.0	00000.0	00000.0	00000.0	0000.0	000000	0000000.0	00000.0	0000000.0	9999.9	0000.0
Paste 7	00000.0	00000.0	00000.0	00000.0	00000.0	0000.0	000000	0000000.0	00000.0	0000000.0	9999.9	0000.0
Paste 8	00000.0	00000.0	00000.0	00000.0	00000.0	0000.0	000000	0000000.0	00000.0	0000000.0	9999.9	0000.0
Paste 9	00000.0	00000.0	00000.0	00000.0	00000.0	0000.0	000000	0000000.0	00000.0	0000000.0	9999.9	0000.0
Paste 10	00000.0	00000.0	00000.0	00000.0	00000.0	0000.0	000000	0000000.0	00000.0	0000000.0	9999.9	0000.0

Select Maximum Parameter Sets Used.

For each parameter set, enter those preset values which are not the same as those in parameter set 1.

The Fusion Series
File Setup Tools Help

(C:\Program Files\Fusion\Docs\Config guide.fsm)

Summary Info HSC Configuration Messages/Screens **HSC Parameter Sets** Ladder Diagram General

Modify Parameter Set Values

Para. Sets Max. Used: 4

Value (Para. Set 4) Value (Para. Set 4)

Preset 1: 00013.0 Batch Preset: 000000

Preset 2: 00015.0 Totalizer Preset: 0000000.0

Preset 3: 00000.0 Main Cnt Offset: 00000.0

Preset 4: 00000.0 Totalizer Offset: 0000000.0

Preset 5: 00000.0 Rate High Preset: 9999.9

Prewarn: 0000.0 Rate Low Preset: 0000.0

Parameter Value Selection

Use Value From

Preset 1: Para. Set 1 Only Batch Preset: Para. Set 1 Only

Preset 2: Para. Set 1 Only Totalizer Preset: Para. Set 1 Only

Preset 3: Para. Set 1 Only Main Cnt Offset: Para. Set 1 Only

Preset 4: Para. Set 1 Only Totalizer Offset: Para. Set 1 Only

Preset 5: Para. Set 1 Only Rate High Preset: Para. Set 1 Only

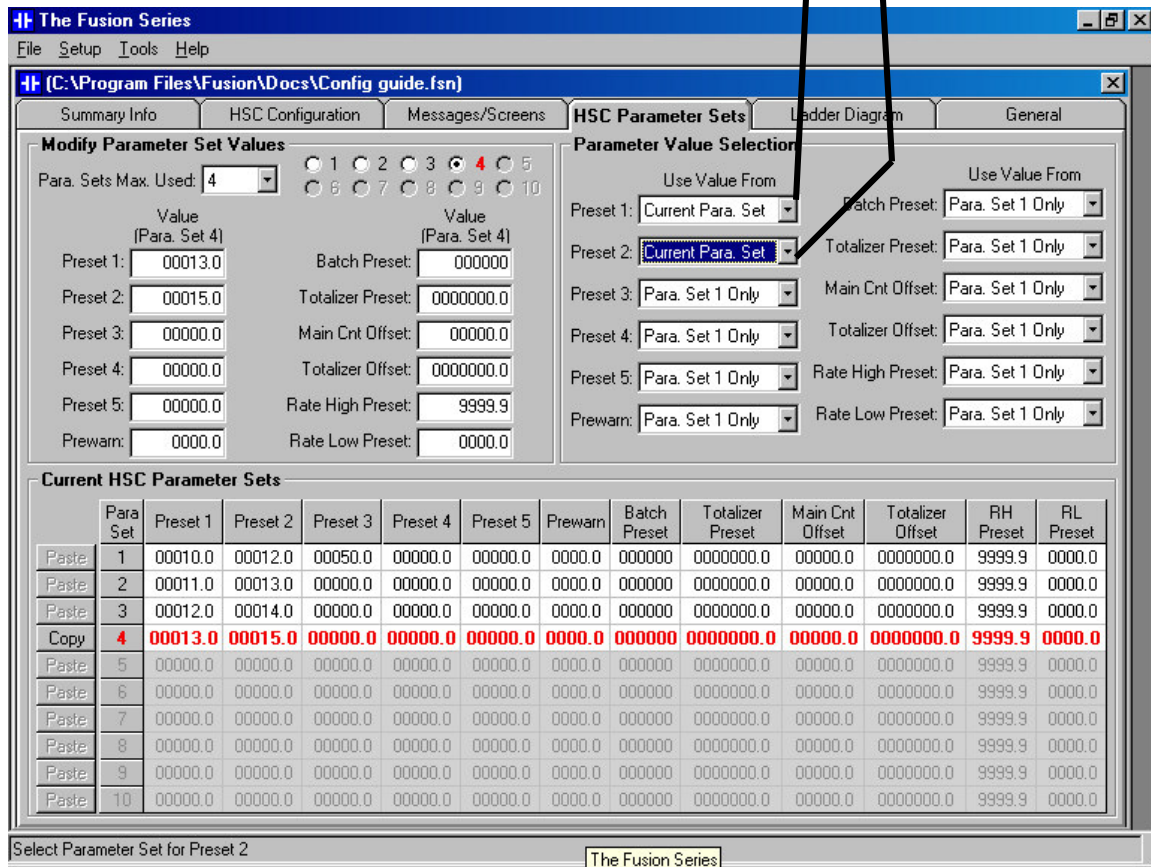
Prewarn: Para. Set 1 Only Rate Low Preset: Para. Set 1 Only

Current HSC Parameter Sets

Para Set	Preset 1	Preset 2	Preset 3	Preset 4	Preset 5	Prewarn	Batch Preset	Totalizer Preset	Main Cnt Offset	Totalizer Offset	RH Preset	RL Preset
Paste 1	00010.0	00012.0	00050.0	00000.0	00000.0	0000.0	000000	0000000.0	00000.0	0000000.0	9999.9	0000.0
Paste 2	00011.0	00013.0	00000.0	00000.0	00000.0	0000.0	000000	0000000.0	00000.0	0000000.0	9999.9	0000.0
Paste 3	00012.0	00014.0	00000.0	00000.0	00000.0	0000.0	000000	0000000.0	00000.0	0000000.0	9999.9	0000.0
Copy 4	00013.0	00015.0	00000.0	00000.0	00000.0	0000.0	000000	0000000.0	00000.0	0000000.0	9999.9	0000.0
Paste 5	00000.0	00000.0	00000.0	00000.0	00000.0	0000.0	000000	0000000.0	00000.0	0000000.0	9999.9	0000.0
Paste 6	00000.0	00000.0	00000.0	00000.0	00000.0	0000.0	000000	0000000.0	00000.0	0000000.0	9999.9	0000.0
Paste 7	00000.0	00000.0	00000.0	00000.0	00000.0	0000.0	000000	0000000.0	00000.0	0000000.0	9999.9	0000.0
Paste 8	00000.0	00000.0	00000.0	00000.0	00000.0	0000.0	000000	0000000.0	00000.0	0000000.0	9999.9	0000.0
Paste 9	00000.0	00000.0	00000.0	00000.0	00000.0	0000.0	000000	0000000.0	00000.0	0000000.0	9999.9	0000.0
Paste 10	00000.0	00000.0	00000.0	00000.0	00000.0	0000.0	000000	0000000.0	00000.0	0000000.0	9999.9	0000.0

Select Parameter Set to View/Edit

Finally, select Current Parameter Set for those presets whose values change from one parameter set to the next, and select Parameter Set 1 Only for those presets whose values remain the same as for parameter set 1.



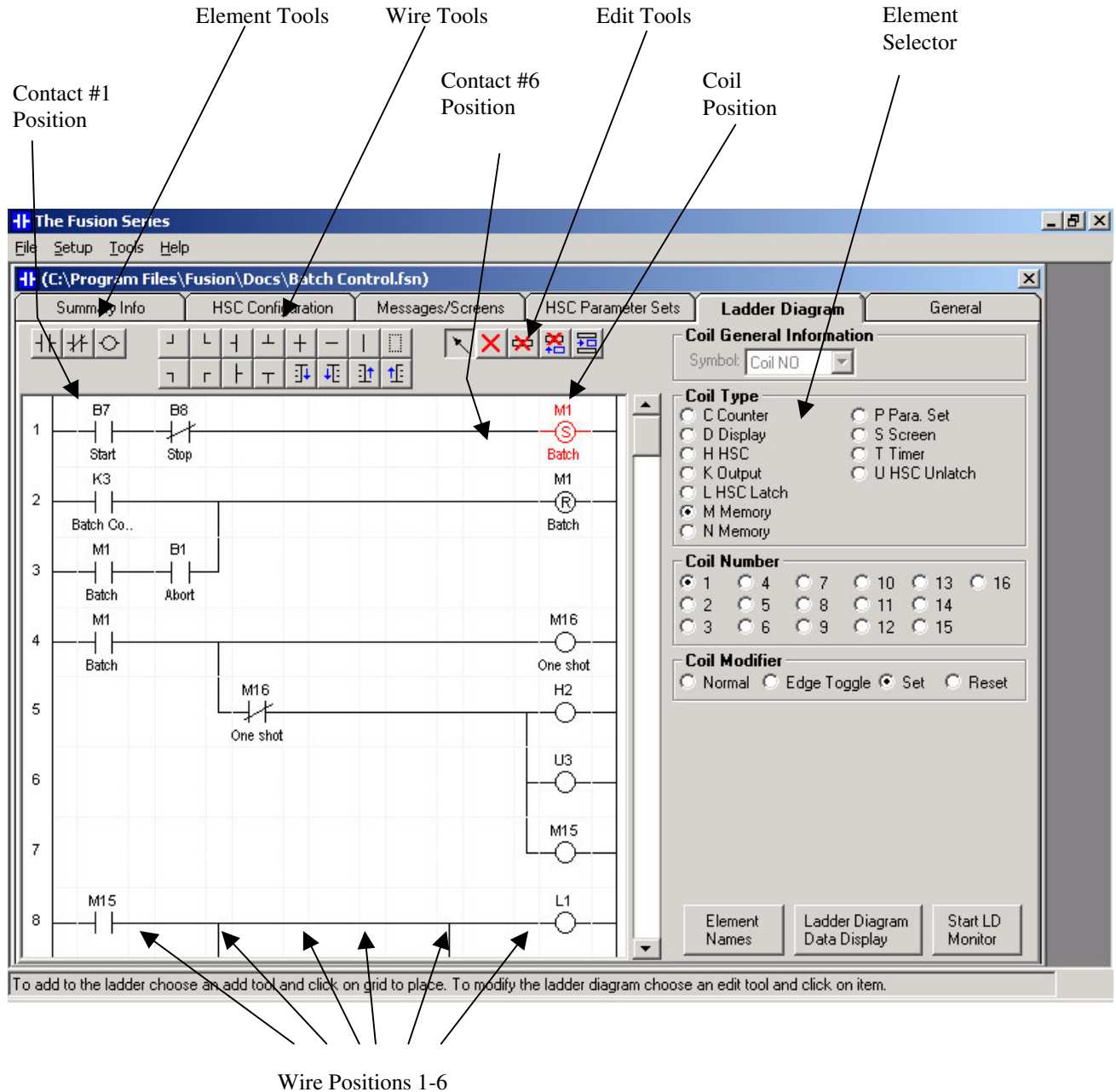
The values used by the Fusion for presets 1, 2, and 3 in parameter sets 1-4 are shown in the table below.

	Preset 1	Preset 2	Preset 3
Parameter set 1	10.00	12.00	50.00
Parameter set 2	11.00	13.00	50.00
Parameter set 3	12.00	14.00	50.00
Parameter set 4	13.00	15.00	50.00

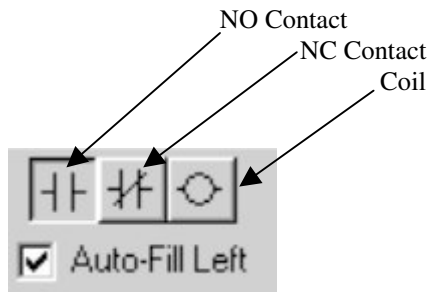
Ladder Diagram

The default ladder diagram is empty. Up to 100 rungs may be programmed, with a maximum of six contacts and one coil per rung. The Fusion processes the ladder from rung 1 up to the first open rung. It does not process past an open rung, even if there are programmed rungs past the open rung.

Ladder Editor Features



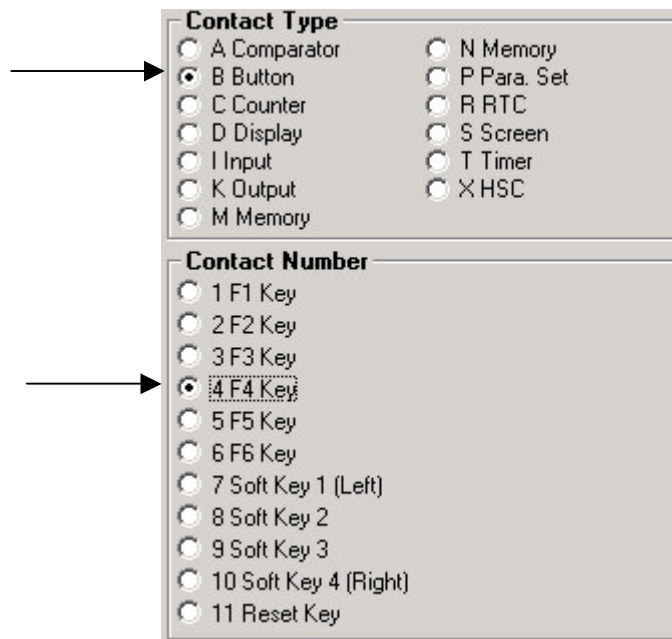
Element Tools



To add a contact or coil, click on the desired element. Then click on the appropriate ladder position.

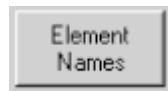


Clicking on an existing element will replace it with the new element. New contacts will default to I1. After placing a contact, select the contact type and number in the element selection field.

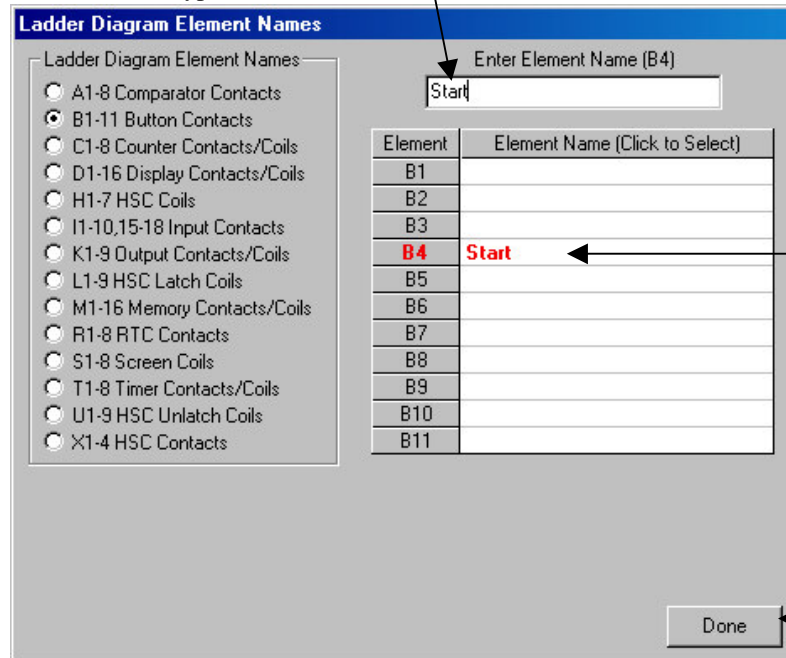


The correct contact is now selected.

To name the element, click on Element Names



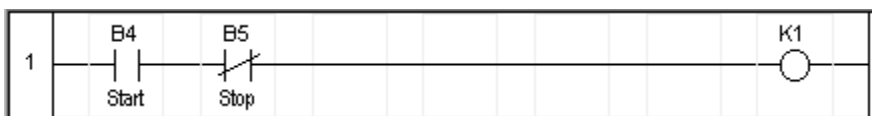
Then select the element, and type in the name.



The name will then appear in the ladder diagram



Continue to add contacts and a coil to the rung as needed. Coils default to K1. Select coil type and number the same as contact type and number. Select the coil modifier if necessary. Contacts can only be placed in the six left element positions, and coils can only be placed the right element position.



When adding a contact, coil, or horizontal wire, horizontal wires can automatically be added to the left of the element in all empty contact and wire positions by checking the Auto-Fill Left box. To turn this option off, uncheck the box.



Special function contacts (Real Time Clock and Comparator) and coils (Counter and Timer) require additional setup.

Real Time Clock (RTC) Contact

Select Range

Contact Type

☐ A Comparator ☐ N Memory
☐ B Button ☐ P Para. Set
☐ C Counter ☒ R RTC
☐ D Display ☐ S Screen
☐ I Input ☐ T Timer
☐ K Output ☐ X HSC
☐ M Memory

Contact Number

☐ 1 ☐ 2 ☐ 3 ☒ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8

LD RTC

Range Type: Every Day

On Time: 12:00 A Off Time: 12:00 A

Daily Range
On and Off Days
Single Day
Every Day

Enter times and days as appropriate for the range type selected

Comparator Contact

Contact Type

☒ A Comparator ☐ N Memory
☐ B Button ☐ P Para. Set
☐ C Counter ☐ R RTC
☐ D Display ☐ S Screen
☐ I Input ☐ T Timer
☐ K Output ☐ X HSC
☐ M Memory

Contact Number

☐ 1 ☐ 2 ☐ 3 ☒ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8

LD Comparator

Source 1: Analog Input 11 (4-20mA)
Comparison: >=
Source 2: Analog Input 11 (4-20mA)
Constant: 00

Analog Input 11 (4-20mA)
Analog Input 12 (0-10V)
Analog Input 13 (4-20mA)
Analog Input 14 (0-10V)

>=
<=

Select Source 1 and Comparison type

Then select Source 2. If Source 2 is a constant, enter the setpoint also.

Contact Type

☒ A Comparator ☐ N Memory

☐ B Button ☐ P Para. Set

☐ C Counter ☐ R RTC

☐ D Display ☐ S Screen

☐ I Input ☐ T Timer

☐ K Output ☐ X HSC

☐ M Memory

Contact Number

☐ 1 ☐ 2 ☐ 3 ☒ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8

LD Comparator

Source 1: Analog Input 12 (0-10V)

Comparison: >=

Source 2: Constant

Constant: 00

Callout box content:

Analog Input 11 (4-20mA)

Analog Input 12 (0-10V)

Analog Input 13 (4-20mA)

Analog Input 14 (0-10V)

Constant

Counter Coil

Designate coil as Count, or Reset, or Direction, and enter preset value, if needed.

Coil General Information

Symbol: Coil NO

Coil Type

☒ C Counter ☐ P Para. Set

☐ D Display ☐ S Screen

☐ H HSC ☐ T Timer

☐ K Output ☐ U HSC Unlatch

☐ L HSC Latch

☐ M Memory

☐ N Memory

Coil Number

☒ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8

LD Counter Input

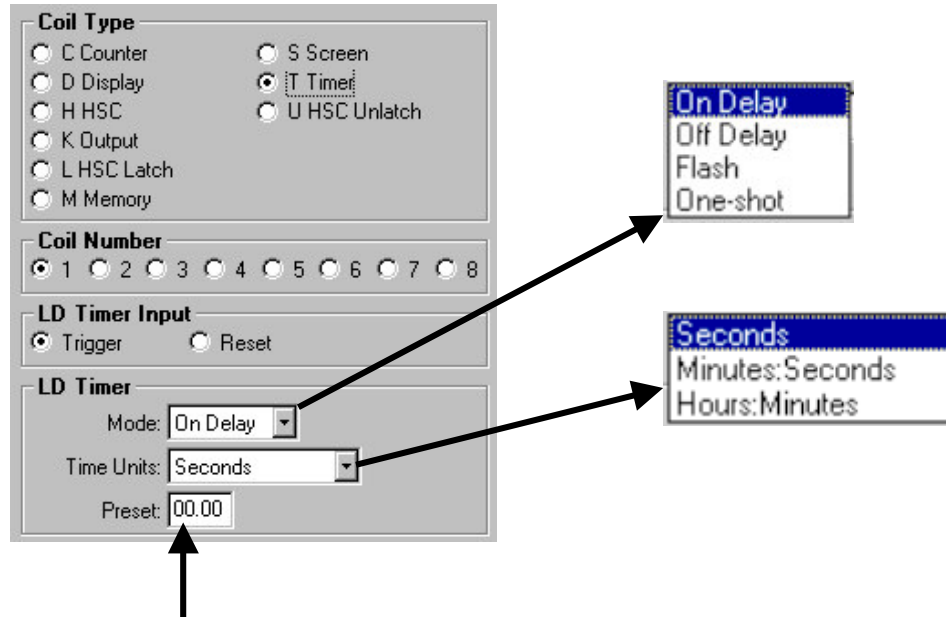
☒ Count In ☐ Reset ☐ Direction

LD Counter

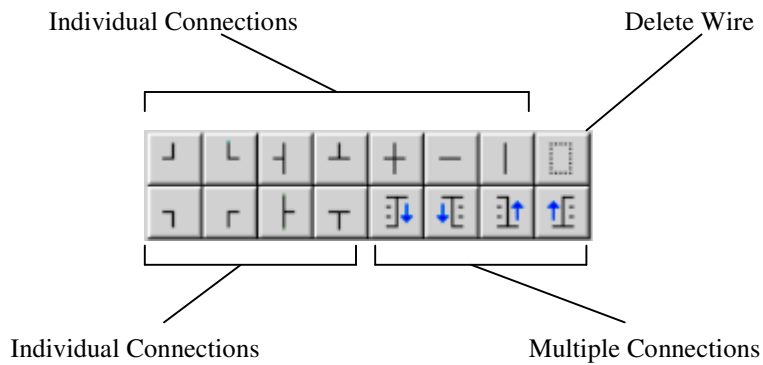
Preset: 0000

Timer Coil

Designate coil as Trigger or Reset. Then select time mode, time units, and enter time preset.

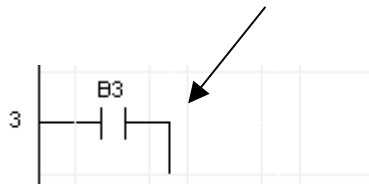


Wire Tools

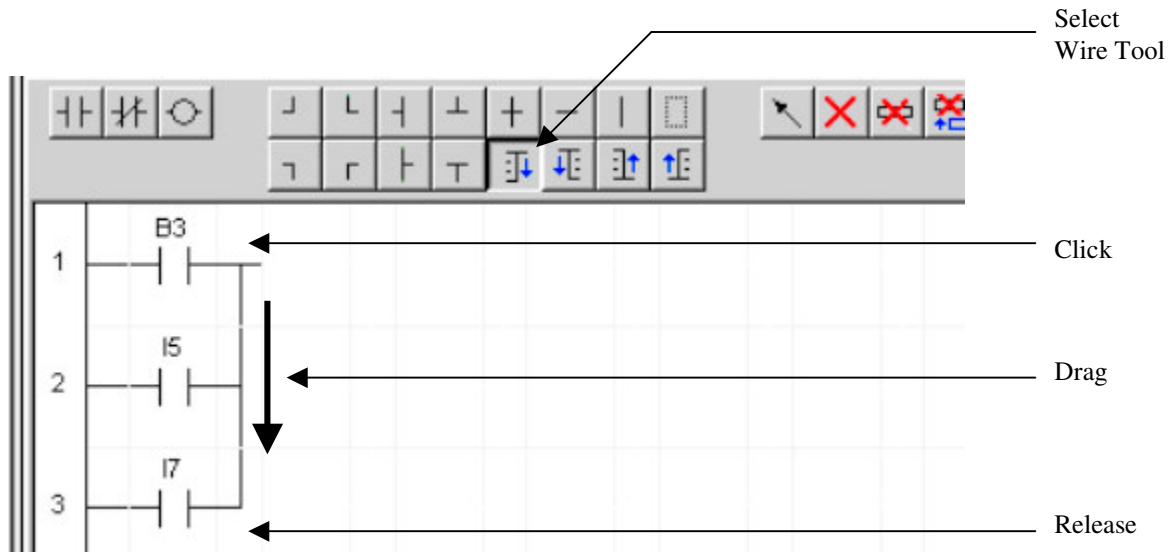


To add an individual wire, click on the desired connection, then click on the position in the ladder where it should go. Horizontal wires may be put in wire or contact positions. All other connections may be put only in wire positions.



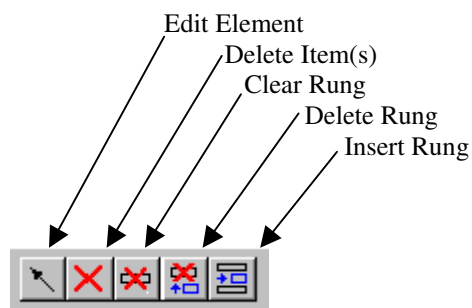


To add a multiple wire connection, click on the desired wire tool. Then click on the starting position and drag in the direction of the tool arrow. The wire is added when the button is released.



Any wire at the starting position will be overwritten, but other existing wires will not be. Once started, wire patterns may be cancelled by dragging outside the ladder editing window, or by dragging past the starting point in the direction opposite the arrow.

Editing Tools



To edit an element, click on the Edit Element Tool, and then click on the selected element in the ladder diagram. Editing allows changing the properties of a contact or coil.

To delete an item, click on the Delete Item(s) Tool, and then click on the contact, coil, or wire to be deleted. To delete multiple items, click on the first item and drag across the remaining items to be deleted.

When the mouse button is released, the items will be deleted. Dragging back across selected items will unselect them.

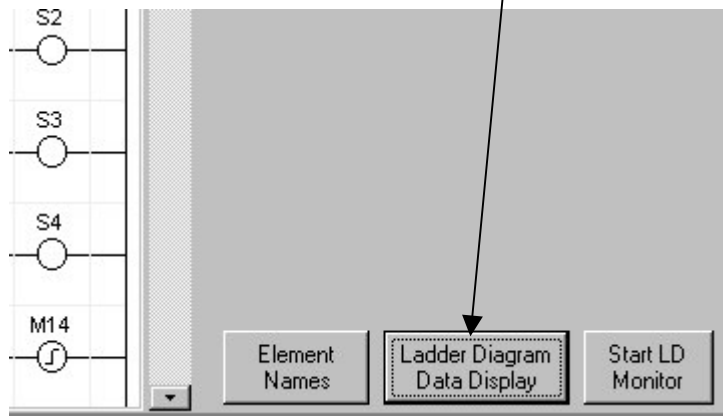
To clear a rung, click on the Clear Rung tool, and then click anywhere on the rung to be deleted. Clearing a rung will simply clear all elements and wires from the rung, and not cause higher numbered rungs to move up one place in the diagram.

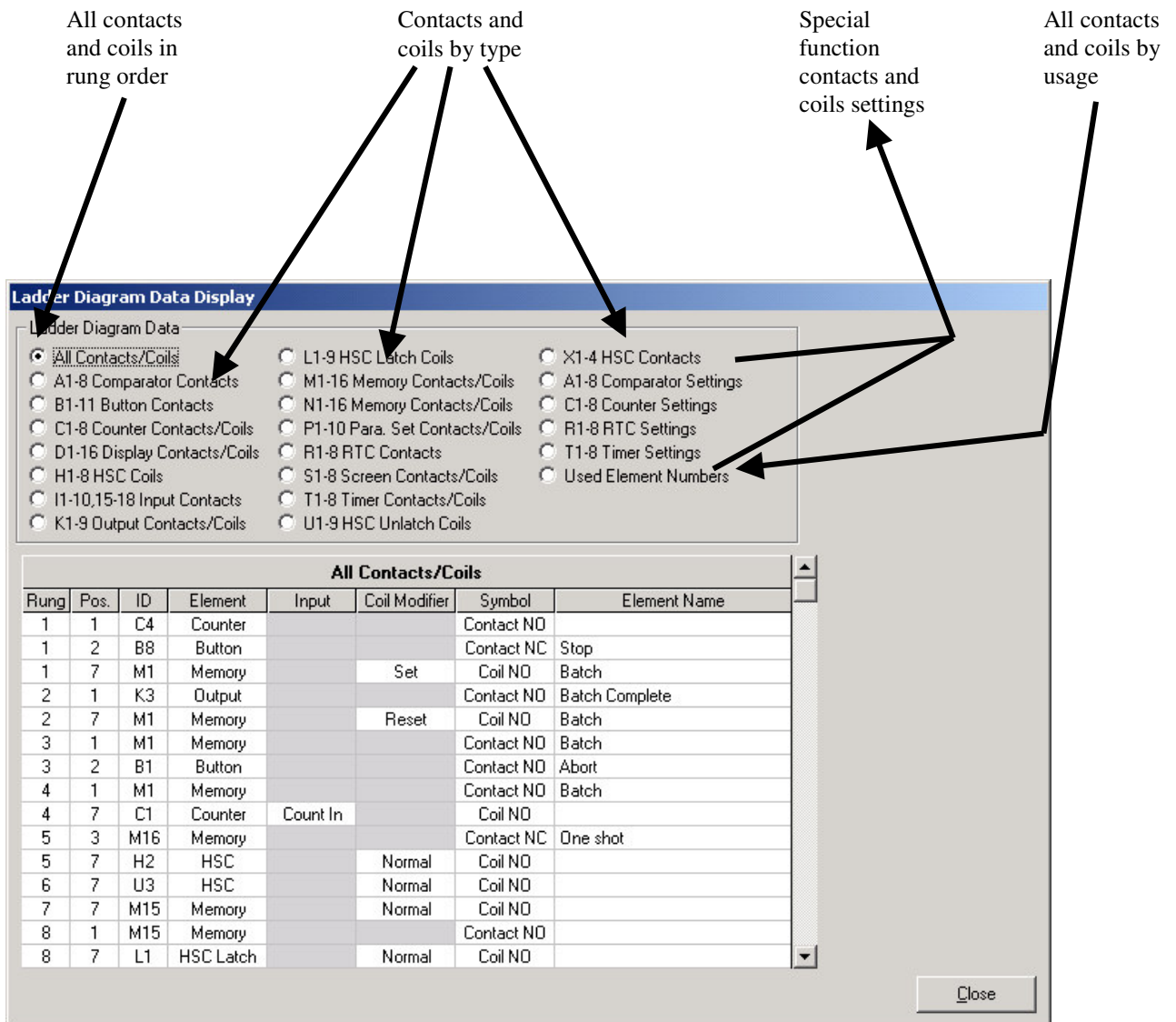
To delete a rung, click on the Delete Rung Tool, and then click on the rung to be deleted. Deleting a rung causes all higher numbered rungs to move up one place in the diagram.

To insert a rung, click on the Insert Rung Tool, and then click on the rung in the diagram where an empty rung is to be inserted. Items on that rung and all higher numbered rungs will be moved down one place in the diagram.

Ladder Diagram Data Display

The ladder diagram data display tabulates all contacts and coils used in the ladder diagram in three different ways. First, all contacts and coils are listed by rung order. Second, all contacts and coils are listed by type. Third, all contacts and coils are tabulated by usage, allowing availability to be determined at a glance. Also, specific settings for the special function contacts and coils are listed by type. Click on the Ladder Diagram Data Display button to access these tables.





Ladder Diagram Monitor

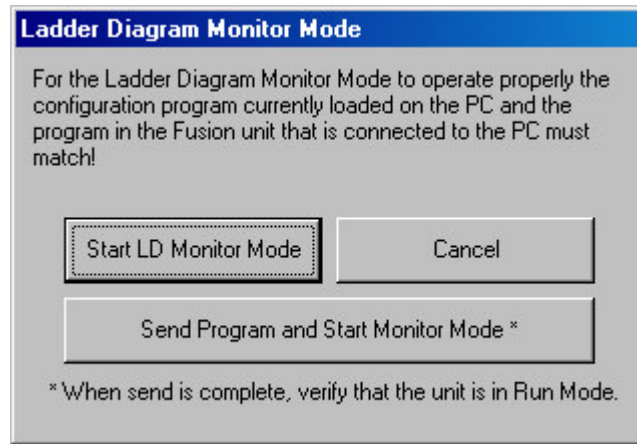
The current ladder running in a connected Fusion control may be monitored. During monitoring, a contact that allows current flow in the diagram will be highlighted with a colored rectangle. A coil that is energized will be highlighted in the same manner.

Comparator, counter, timer, and real time clock settings and values for elements in the current editor window will also be displayed during monitoring. If counter or timer presets are edited on the unit while monitoring, the updated values will be displayed during monitoring, but are not stored in the PC configuration program.

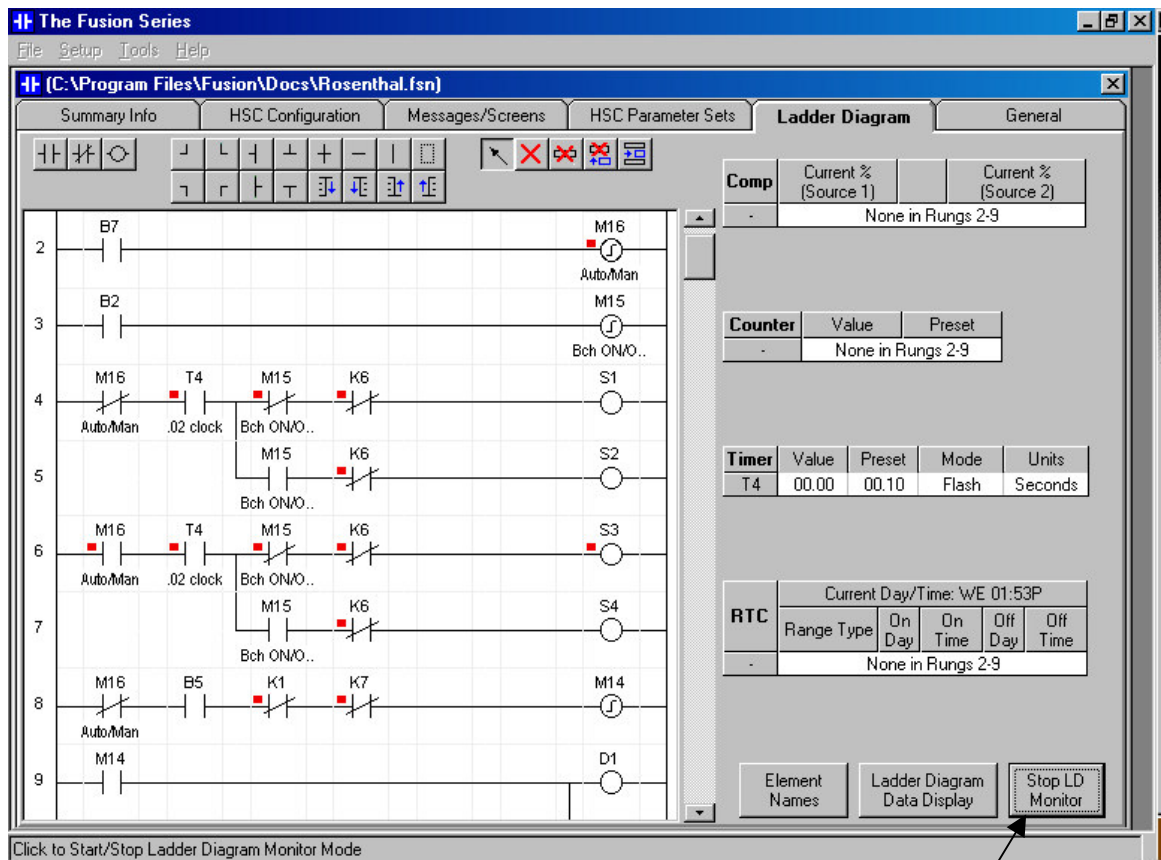
To run the ladder diagram monitor, click the Start LD monitor button.



Then click on Start LD Monitor Mode, or Send Program and Start Monitor Mode. The second choice insures that the program loaded into the Fusion is the same as the current program running on the PC.



The Monitor Mode screen.



To exit, click the Stop LD Monitor button.

General

The Fusion Series

File Setup Tools Help

(C:\Program Files\Fusion\Docs\Batch Control.fsn)

Summary Info HSC Configuration Messages/Screens HSC Parameter Sets Ladder Diagram **General**

Power Up/Down

Power-Up: Run Enabled

Power-Down Ladder Logic Retention

Counters: 1 to 4 Memory: 1 to 8

Timers: 1 to 4 Display: 1 to 16

Program Key

Program Key: Key Enabled

Password: 000000

Reset/Run Keys

Modify Reset/Run Keys

☒ Reset Key ☐ Run Key

Parameter Set	Main Counter	Totalizer	Batch Counter	Out 1 (K1) Form C	Out 2 (K2) Form C	Out 3 (K3) Form C	Out 4 (K4) Form A	Out 5 (K5) Form A	Out 6 (K6) Transistor	Out 7 (K7) Transistor	Out 8 (K8) 4-20mA	Out 9 (K9) 0-10V
- NA	- NA	- NA	- NA	- NA	- NA	- NA	- NA	- NA	- NA	- NA	- NA	- NA

Current Reset/Run Key Settings

Key	Parameter Set	Main Counter	Totalizer	Batch Counter	Out 1 (K1)	Out 2 (K2)	Out 3 (K3)	Out 4 (K4)	Out 5 (K5)	Out 6 (K6)	Out 7 (K7)	Out 8 (K8)	Out 9 (K9)
Reset	-	-	-	-	-	-	-	-	-	-	-	-	-
Run	-	-	-	-	-	-	-	-	-	-	-	-	-

☐ Device Display Format

Comm Settings: RS-232 and RS-485

Port: 1 (From Comm Setup)

RS-232 Programming/Printing

Baud: 19200 Parity: Even

RS-232 Printing Only

Handshaking: None

Terminating Character: CR

RS-485

Baud: 19200 Parity: Even

Modbus RTU Addr.: 000

Modbus Reg. Edit: None

Default Configuration Program

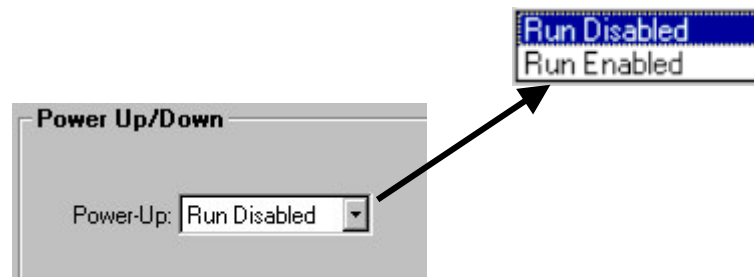
All	Summary Info	All HSC Config.
HSC Main Cnt	HSC Presets	HSC Tot./Bat.
HSC Rate	HSC Out. Mode	HSC Inputs
All Msg's	Run Msg's	LD Msg's
HSC Para. Sets	Ladder Diagram	General

Enter/Edit General data parameters

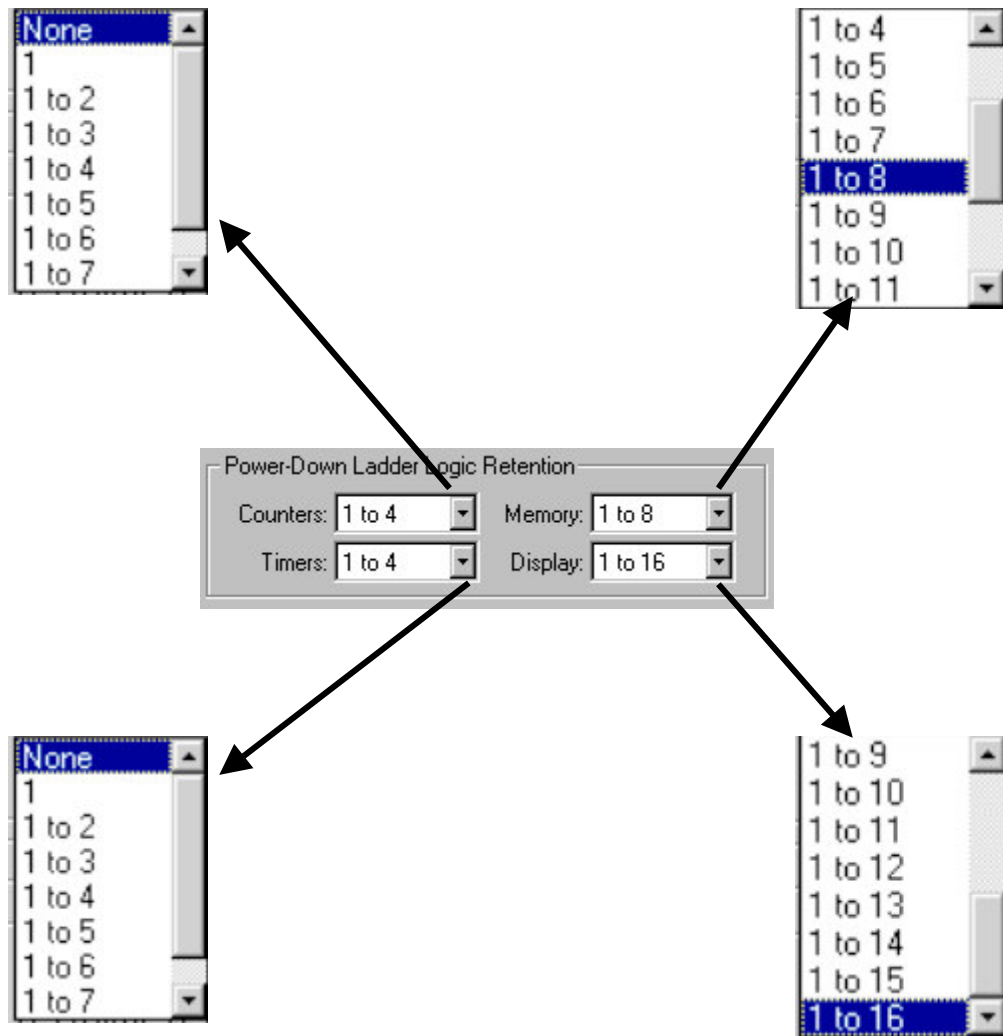
The General tab covers six miscellaneous functions:

1. Power up run enabled / disabled
2. Power down ladder element retention
3. Front panel program mode access
4. Reset and Run key functions
5. Communication port settings
6. Program defaulting

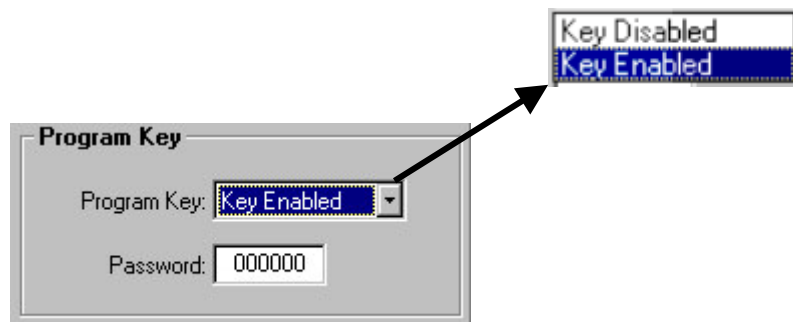
If the unit should go into the run mode automatically at power up, enable the run mode. Otherwise, leave it disabled.



Select how many and which, if any, counters, timers, memory and display coils should be retained at power down.



If the program key should be enabled to put the unit into stop mode, enable it here. If a program mode password is required, enter it here.



Select the front panel Reset and Run key functions.

With Reset key selected, assign parameter set increment, reset, and output functions.

Reset/Run Keys

Modify Reset/Run Keys

☒ **Reset Key** ☐ Run Key

Parameter Set	Main Counter	Totalizer	Batch Counter	Out 1 (K1) Form C	Out 2 (K2) Form C	Out 3 (K3) Form C	Out 4 (K4) Form A	Out 5 (K5) Form A	Out 6 (K6) Transistor	Out 7 (K7) Transistor	Out 8 (K8) 4-20mA	Out 9 (K9) 0-10V
- NA	- NA	- NA	- NA	- NA	- NA	- NA	- NA	- NA	- NA	- NA	- NA	- NA

Current Reset/Run Key Settings

Key	Parameter Set	Main Counter	Totalizer	Batch Counter	Out 1 (K1)	Out 2 (K2)	Out 3 (K3)	Out 4 (K4)	Out 5 (K5)	Out 6 (K6)	Out 7 (K7)	Out 8 (K8)	Out 9 (K9)
Reset	-	-	-	-	-	-	-	-	-	-	-	-	-
Run	-	-	-	-	-	-	-	-	-	-	-	-	-

☐ Device Display Format

- NA
1 Increm

- NA
0 Rst

- NA
0 Unlatch
1 Latch

Then select the Run key, and assign any required parameter set increment, reset, or output functions.

Reset/Run Keys

Modify Reset/Run Keys

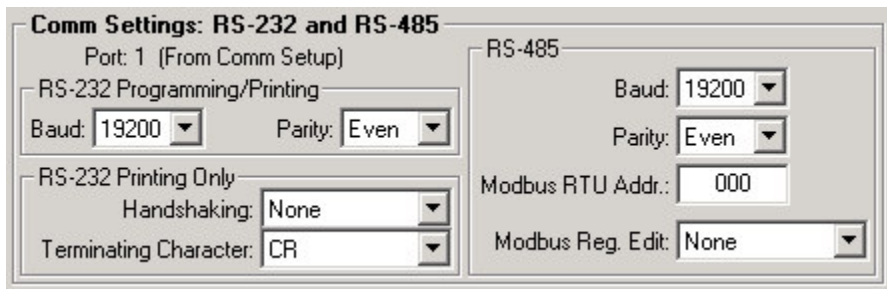
☐ Reset Key ☒ **Run Key**

Parameter Set	Main Counter	Totalizer	Batch Counter	Out 1 (K1) Form C	Out 2 (K2) Form C	Out 3 (K3) Form C	Out 4 (K4) Form A	Out 5 (K5) Form A	Out 6 (K6) Transistor	Out 7 (K7) Transistor	Out 8 (K8) 4-20mA	Out 9 (K9) 0-10V
- NA	- NA	- NA	- NA	- NA	- NA	- NA	- NA	- NA	- NA	- NA	- NA	- NA

Current Reset/Run Key Settings

Key	Parameter Set	Main Counter	Totalizer	Batch Counter	Out 1 (K1)	Out 2 (K2)	Out 3 (K3)	Out 4 (K4)	Out 5 (K5)	Out 6 (K6)	Out 7 (K7)	Out 8 (K8)	Out 9 (K9)
Reset	Increment	Reset	-	-	-	-	Unlatch	-	-	-	-	-	-
Run	-	-	-	-	-	-	-	-	-	-	-	-	-

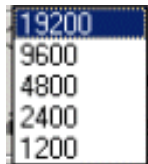
Set up the RS-232 port and the RS-485 port



The dialog box is titled "Comm Settings: RS-232 and RS-485". It contains two main sections. The left section is for "Port: 1 (From Comm Setup)" and includes "RS-232 Programming/Printing" and "RS-232 Printing Only" sub-sections. The right section is for "RS-485".

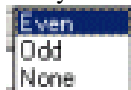
Section	Parameter	Value
Port: 1 (From Comm Setup)	RS-232 Programming/Printing	
	Baud	19200
	Parity	Even
	Handshaking	None
RS-232 Printing Only	Terminating Character	CR
	Handshaking	None
RS-485	Baud	19200
	Parity	Even
	Modbus RTU Addr.	000
	Modbus Reg. Edit	None

Baud rate for each port can be set individually, and the choices are 19.2 k, 9600, 4800, 2400, and 1200



A vertical dropdown menu showing the following options: 19200, 9600, 4800, 2400, and 1200. The option 19200 is currently selected and highlighted in blue.

Parity for each port can be set individually, and the choices are even, odd, and no parity



A vertical dropdown menu showing the following options: Even, Odd, and None. The option Even is currently selected and highlighted in blue.

If the RS-232 port is to be used with a printer, set the handshaking to none, DTR, or XON/XOFF



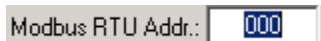
A vertical dropdown menu showing the following options: None, DTR/Busy, and XON/XOFF. The option None is currently selected and highlighted in blue.

If the RS-232 port is to be used with a printer, set the terminating character(s) to carriage return, or carriage return and line feed



A vertical dropdown menu showing the following options: CR and CR-LF. The option CR is currently selected and highlighted in blue.

Set the RS-485 port address to a unique number on the network, in the range of 000-247. 000 is a broadcast address.



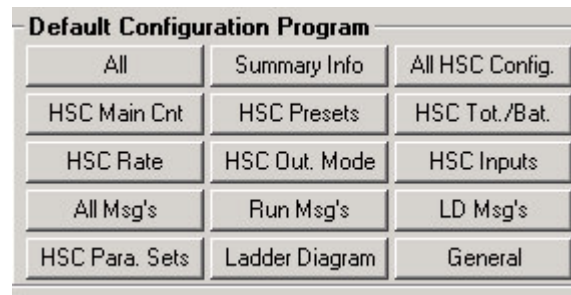
A text input field labeled "Modbus RTU Addr.:" containing the value "000".

Select which registers can be written to. The choices are none, or 1-7 (real time clock settings), or all editable (1-287 and 336-340)



A vertical dropdown menu showing the following options: None, RTC Only, and Registers 1-287. The option None is currently selected and highlighted in blue.

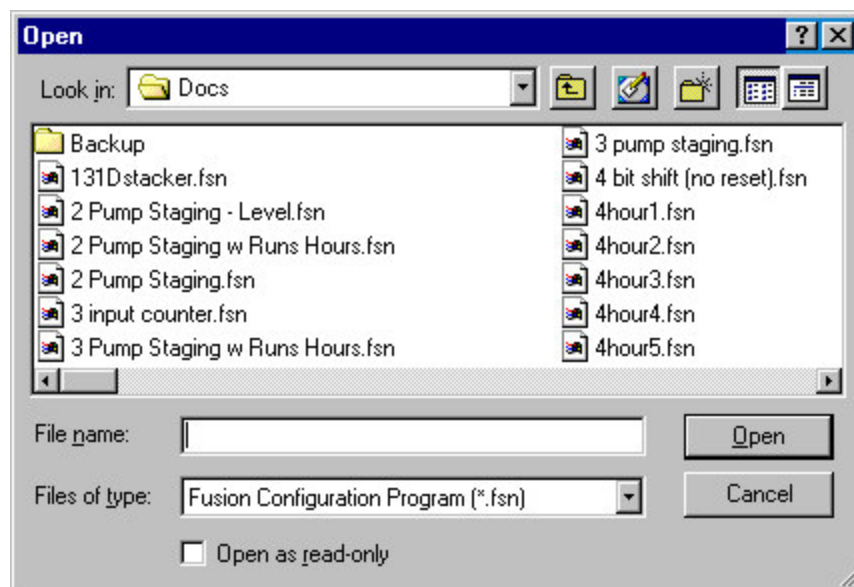
Finally, if all or any part of the configuration program needs to be returned to default settings, click on the appropriate default button.



Open

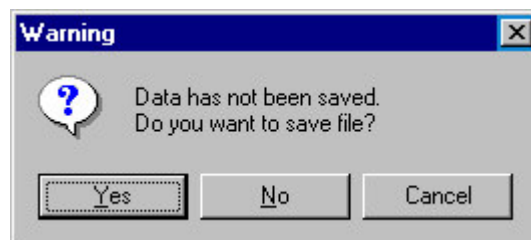
Selecting File Open will cause a standard Windows® Open dialog box to appear. Enter the path and name of the file to open, or browse to locate the file. Click the Open button to open the file.

Fusion files are saved with the default extension of .fsn. By default, the Open dialog box lists files with this extension.



Close

This command will close the main programming window. If programming data has not been saved or has changed, the program will allow the user the opportunity to save the data before closing the screen.



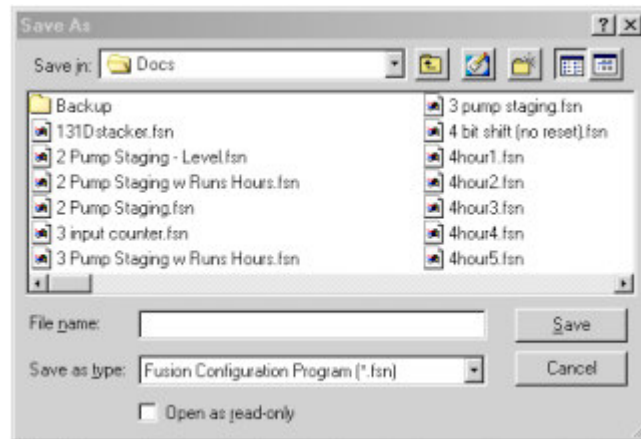
Save

The File Save command will cause all program data to be written to the file named in the title bar of the programming screen. If there is no file associated with the current configuration program, the Save As dialog box will be displayed.

Save As

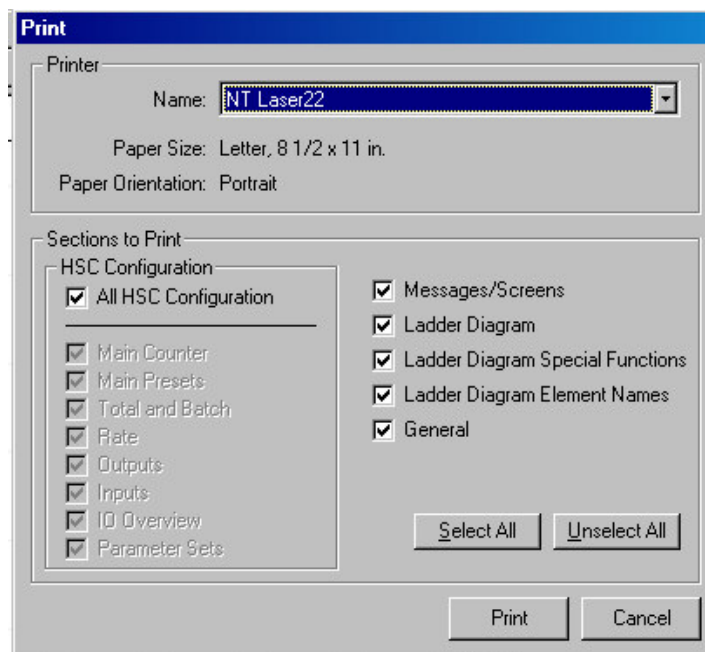
The File Save As command will cause a standard Windows® Save As dialog box to display. Enter the path and name of the file to save, or navigate to the file location. Click the Save button and all program data will be written to the file. The new file name will also be displayed in the title bar of the programming screen.

Fusion files are saved with the default extension of .fsn. Also, by default, the Save As dialog box lists files with the Fusion extension.



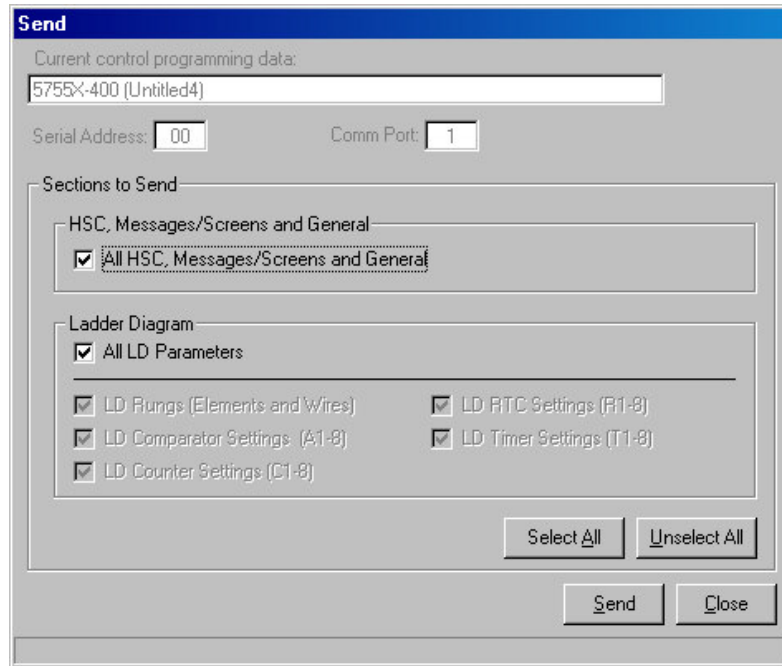
Print

Select File Print to print the configuration program. By default, all program data is printed. However, portions of the program can be unselected and not printed.



Send

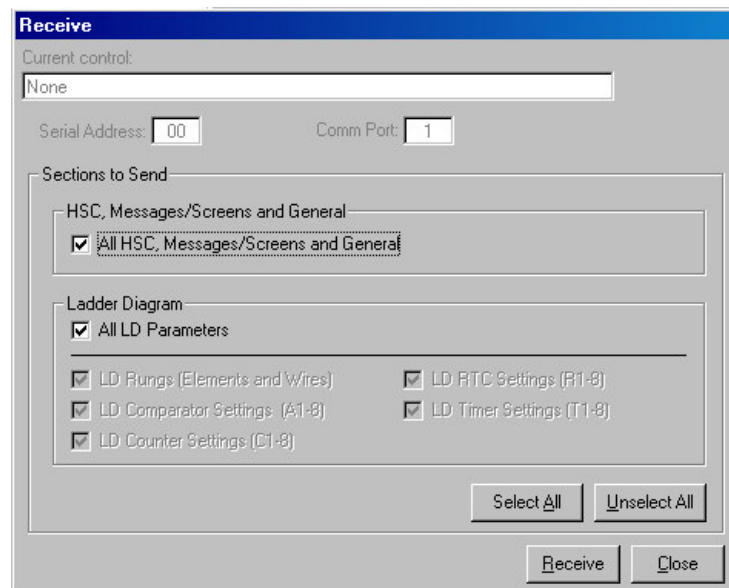
The Send command transmits the configuration program to the Fusion control. By default, all program data is sent, but portions of the program can be unselected. All program settings not sent remain unchanged in the Fusion.



The 'Send' dialog box is used to transmit configuration data to a Fusion control. It features a title bar 'Send' and a 'Current control programming data:' field containing '5755X-400 (Untitled4)'. Below this are 'Serial Address:' (00) and 'Comm Port:' (1) fields. The 'Sections to Send' section contains two main categories: 'HSC, Messages/Screens and General' with a checked 'All HSC, Messages/Screens and General' option, and 'Ladder Diagram' with a checked 'All LD Parameters' option. Under 'Ladder Diagram', there are four sub-options, all checked: 'LD Rungs (Elements and Wires)', 'LD RTC Settings (R1-8)', 'LD Comparator Settings (A1-8)', and 'LD Timer Settings (T1-8)'. At the bottom right of the 'Sections to Send' area are 'Select All' and 'Unselect All' buttons. At the very bottom of the dialog are 'Send' and 'Close' buttons.

Receive

This command will read a program from a Fusion control. User selection to receive partial program data is supported. All program settings not received from the unit will be set to default in the configuration program.



The 'Receive' dialog box is used to read configuration data from a Fusion control. It features a title bar 'Receive' and a 'Current control:' field containing 'None'. Below this are 'Serial Address:' (00) and 'Comm Port:' (1) fields. The 'Sections to Send' section (despite the name, it's for selection) contains two main categories: 'HSC, Messages/Screens and General' with a checked 'All HSC, Messages/Screens and General' option, and 'Ladder Diagram' with a checked 'All LD Parameters' option. Under 'Ladder Diagram', there are four sub-options, all checked: 'LD Rungs (Elements and Wires)', 'LD RTC Settings (R1-8)', 'LD Comparator Settings (A1-8)', and 'LD Counter Settings (C1-8)'. At the bottom right of the 'Sections to Send' area are 'Select All' and 'Unselect All' buttons. At the very bottom of the dialog are 'Receive' and 'Close' buttons.

Exit

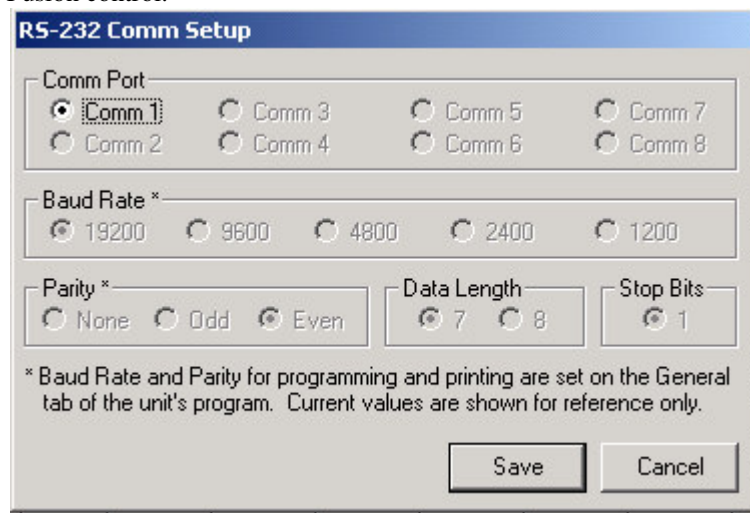
Choose the File Exit command to exit the program. If program data has not been saved, or has changed, the program will display a message and allow the user the opportunity to save the data before closing the screen.

SETUP



Comm Setup

This function allows the user to select communication port settings that enable this program to communicate with a Fusion control.

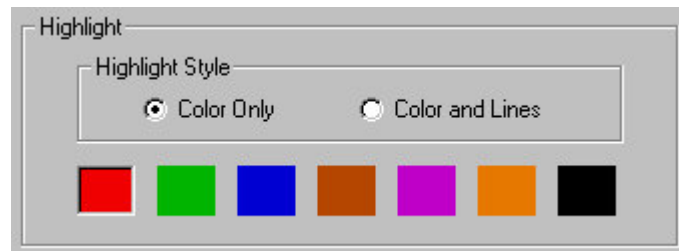


The comm port is selectable from the ports available on the PC.

Options

Highlight

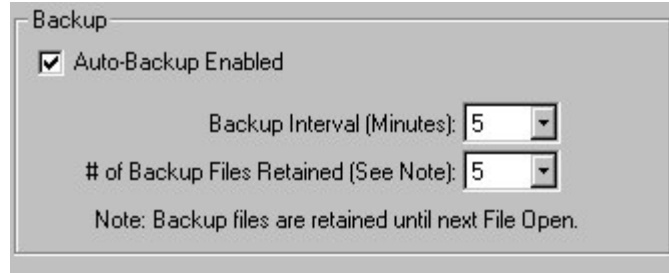
Highlighting is used to distinguish a selected item from a list of items. Highlighting consists of applying a color other than black to the text. In the ladder diagram, lines can be added above and below the selected element in addition to coloring the text and symbol. Choose highlighting by color only, or by color and lines, and choose the highlight color.



Backup

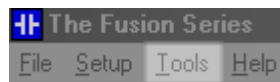
This program automatically saves a copy of the open file to the \Docs\Backup directory. Backup files are saved until a new file is opened.

Choose to enable / disable this feature, and select the backup interval in minutes and the number of backup copies to be saved.



A dialog box titled "Backup" with a light gray background. It contains a checked checkbox labeled "Auto-Backup Enabled". Below this, there are two spin boxes: "Backup Interval (Minutes):" set to 5 and "# of Backup Files Retained (See Note):" set to 5. At the bottom, a note states: "Note: Backup files are retained until next File Open."

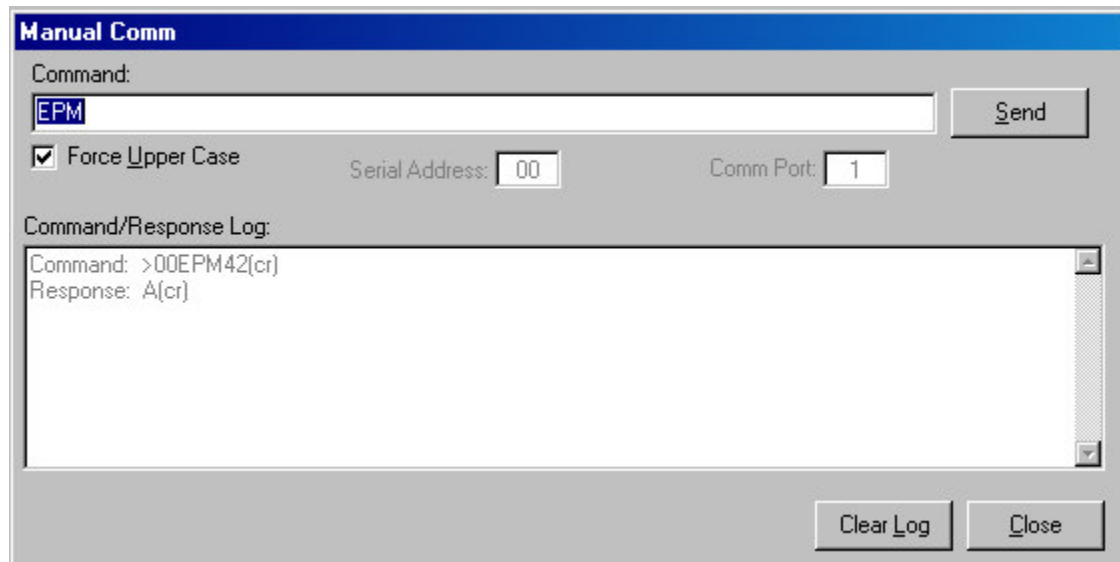
TOOLS



Manual Comm

This program reads and writes configuration programs from / to the Fusion control by a series of Query and Load commands. These commands, and a few others, may be sent individually to the control by using Manual Communications. All commands and responses are described in detail in another document, manual number 57550-902.

The command is three characters. Type them into the command field and click Send. This program will assemble the command into an Optomux® compatible string, send it to the control, and print the response in the Command / Response Log field.



A dialog box titled "Manual Comm" with a blue header bar. It contains a "Command:" label above a text input field with "EPM" entered. To the right of the input field is a "Send" button. Below the input field is a checked checkbox labeled "Force Upper Case". To the right of this checkbox are two more input fields: "Serial Address:" with "00" and "Comm Port:" with "1". Below these fields is a "Command/Response Log:" label above a large text area. The log area contains the text: "Command: >00EPM42(cr)" and "Response: A(cr)". At the bottom right of the dialog are two buttons: "Clear Log" and "Close".

Query and Load commands are less likely to be sent manually than the three non-configuration commands, EPM, RPF, and XPM. EPM is Enter Program Mode. This is the only way to put the Fusion in the program mode if the program key has been disabled. XPM is eXit Program Mode. RPF is ReProgram Flash memory.